Railway Age

Vol. 64. May 3, 1918 No. 18

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Published every Friday and daily eight times in June by the

Simmons-Boardman Publishing Company, Woolworth Building, New York

EDWARD A. SIMMONS, *Pres.* L. B. SHERMAN, *Vice-Pres.* HENRY LEE, *Vice-Pres. & Treas.* M. H. WIUM, *Secretary.*

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Entered at the Post Office at New York, N. Y., as mail matter of the second class.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free: United States and Mexico, $5.00; Canada, $6.00; Foreign Countries (excepting daily editions), $8.00; single copies, 15 cents each.

WE GUARANTEE, that of this issue 8,750 copies were printed; that of these 8,750 copies 6,455 were mailed to regular paid subscribers, 172 were provided for counter and news companies' sales, 857 were mailed to advertisers, 909 were mailed to exchanges and correspondents, and 357 were provided for new subscriptions, samples, copies lost in the mail and office use; that the total copies printed this year to date were 174,192, an average of 9,676 copies a week.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

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EDITORIAL

Railway Age

Repair Facilities Must Be Improved

There must be no longer delay in making the necessary improvements in shops and engine terminals for the oncoming winter. At the present time, because of lack of facilities, railway shops are working about 15 per cent overtime in order to get the motive power back into good condition after the severe winter. One reason for the poor condition of the power was the lack of proper engine terminal facilities. If the railroads are to pass through next winter without a serious power shortage, conditions must be improved. Even with the new locomotives to be received this year, the power will be taxed to the utmost next winter. Everything that can must be done to keep the power in condition, to turn it promptly at the terminals, and to keep it on the road doing work for the greatest possible percentage of time. This cannot be done unless immediate attention is given the facilities for handling and repairing the power.

Make the Idle Laborer Work

A letter by T. J. Foley, vice-president of the Illinois Central system, published in this issue, focuses attention upon a phase of the labor situation in this country which is very much out of harmony with the spirit of the times. In spite of an acute shortage of labor on the farms, in the factories and on the railways, Mr. Foley's observations during a recent trip over the southern lines of the Illinois Central system led him to believe that at least 10 per cent of the labor supply of the South is idle at this time. This is a condition which adds force to the demand for the conscription of labor. Americans of whatever color or position in life who fail to put their shoulders to the wheel to back up the men who are fighting their battles are disloyal to their country in its time of need. To work for one's country is a small sacrifice compared with shouldering a gun, and all those who insist upon idling should be held up to public scorn. If an aroused sentiment against idlers fails to drive these men to work they should be conscripted.

Fuel Problems to Be Discussed in Convention

Of vital interest to the public in general and the railways in particular, will be the convention of the International Railway Fuel Association which will be held in Chicago, May 23. This convention is to be conducted under the auspices of both the Railroad and Fuel administrations. The general arrangements are under the direction of C. R. Gray, director of the Division of Transportation of the Railroad administration, and P. B. Noyes, director of the Conservation division of the Fuel administration. Fuel problems will be discussed, which are of vital interest to both the transportation and mechanical departments of the railways. The trying times experienced last year due to coal shortage have shown what an important part the railroads bear to the entire fuel problem. Prominent speakers from both the United States and Canada are to discuss this question. Never before has there been such a group of authorities on fuel gathered together for the purpose of discussing the fuel problem in a broad way. It behooves every railroad to have their transportation and mechanical officers in attendance that the messages may be sown on fruitful ground.

Standard Locomotives for Interchange Service

There is an impression prevailing that the standard locomotives to be purchased by the government will be used only as a liquid reserve and to meet the requirements of interchange power. Such a plan has received commendation. To compel the railroads desiring locomotives for their particular use to purchase standard locomotives would be asking them to purchase locomotives which perhaps would not best meet their conditions and which they are not prepared to maintain. Take the Pennsylvania for instance. That road has perhaps more carefully studied its motive power requirements and spent more money to develop locomotives which best meet its conditions than any road in the United States. It is obvious that any standard locomotive, which of necessity is of a compromise design, will not be as efficient as the locomotives it now operates. The same applies to other roads. On the other hand there are roads which are now operating locomotives which may not be as well designed as the standard locomotives. In such cases these roads would undoubtedly be glad to purchase the standard locomotives, *provided the details of the design are changed to accord with their own existing standards.* A railroad cannot be blamed for not wanting to *buy* the completely standardized locomotives. If they buy them the maintenance difficulties due to the fact that they will be different from any other locomotives they operate, will be with them until the locomotives pass out of existence or until a substantial sum is spent to change them over to meet their own standards. This leads to the question as to what the government is to do with the standard locomotives it purchases, after the railroads pass back into the hands of the private owners. It is obvious that standard locomotives would be of no further use to the government. They undoubtedly would be sold to the highest bidder. Being of a detail design different from that used on any railroad in the country, it is apparent that they are very liable to be sold at a loss. Is it wise for the government to order too many of these locomotives? Is it not better to permit the roads to order locomotives best suited to their conditions?

Relation Between Signals and Track Capacity

Parts of railroad systems, which before the war were operated very satisfactorily under manual block signaling, are now badly congested by the heavy movement of war traffic. It is essential to overcome such conditions as quickly as possible. Where congested conditions exist on such lines tonnage trains, of necessity, must wait on sidings and main tracks to meet or allow other trains to clear the block before they can then proceed. This introduces a large amount of dead time and such delays are equivalent to holding much additional equipment out of service. Every minute of time saved in the movement of tonnage trains means that rolling stock and motive power

will be released and ready for other duties just that much sooner. One problem before the Railroad Administration and the operating officers of the railroads today is the elimination of as much of this dead time on sidings and main lines as possible. The problems confronting the administration are large and varied in number, and details must necessarily wait their turn, but it would appear to be advisable for problems such as those noted above to receive the early attention not only of railroad officers but the Railroad Administration as well. When it is considered that, on one stretch of single track 15.7 miles long where more than one hour was formerly required to get four important southbound trains through, the installation of automatic signals has enabled this to be accomplished in less than half the time, it would appear that such installations can be expected to eliminate some of the present congestion. Since signals can be installed at a much less cost per mile and with a considerably smaller number of laborers than other classes of work from which the same returns may be obtained, and as such installations will cut down to a very great extent the amount of dead time in the movement of the present traffic it would appear that this subject should receive careful and early consideration.

Price Versus Speed

THE PURCHASING DEPARTMENT of the Railroad Administration has this week placed the orders for about 100,000 freight cars and 1,025 locomotives. These are the first cars and locomotives that have been ordered for the railways of the United States this year, although one-third of the year is now passed. The St. Paul planned to build 5,000 cars in its own shops but has given up this plan. Furthermore, the statement that these cars and locomotives have been ordered is subject to an important qualification. The specialties which are to be put on them have not been ordered yet; and until the car and locomotive builders get these specialties they cannot actually begin to turn out the equipment. The delays which already have occurred in placing the orders will considerably reduce the number of locomotives and cars that can be built before the rush of business comes this fall. Any further delays in ordering the specialties will further reduce the amount of equipment that can be delivered before fall. Many supply companies are now practically or wholly out of orders and will have to close down their plants and let labor go if they do not get orders soon. It would appear, however, that there are to be further delays, since the supply people have been asked to furnish a large amount of information regarding their costs which they must first work up, and which the Purchasing Division must later compile if the data is to serve any useful purpose.

In entering upon its program of locomotive and car standardization, and in adopting the policy it has in negotiating with the equipment and supply companies, the Railroad Administration has been prompted by worthy motives. Its purpose has been to increase the efficiency of the railroads and to get equipment and supplies for them at the lowest prices practicable. The policy adopted by it regarding standardization of cars is eminently wise and fair. Its scheme of locomotive standardization is, in our opinion, very unwise. The Purchasing department has succeeded in placing the orders for cars on a basis of 5 per cent profit as compared with the 10 per cent originally asked by the builders. This is a victory for the Purchasing department which will save the railroads several million dollars, although it has created intense dissatisfaction on the part of most of the car builders. It is probable that the Purchasing department will succeed in getting the locomotives on a similar basis, which will save the railways several million dollars more. But it would seem that in the handling of these important matters of standardization and purchases a matter far more important has been given insufficient consideration. This is the imperative need for avoiding anything which will cause delay in providing new cars and locomotives as fast as they can be built.

The railways, under the direction of the Railroad Administration, are now being operated, from a purely transportation standpoint, with a high degree of efficiency, and apparently are moving more essential traffic than ever before. But the crucial test for the railways is going to come in the year 1918, as it did in the year 1917, not in the spring or summer, but in the fall and winter, and how the railways will be able to stand the test next fall and winter will depend mainly, first, on the condition of their old locomotives, cars, track and other facilities, and, second, on how many new locomotives and cars they have and on what additional facilities they are provided with. Now, from present indications the railways will not get enough new cars and locomotives before next fall merely to replace those that will have to be scrapped this year; and they certainly will not unless the Purchasing Division very soon places all the orders for the car and locomotive specialties as well as for the building of the equipment itself.

We respectfully submit that in present circumstances *speed* is more important than a *small difference in prices;* and that the amount the country may be caused to lose next fall and winter in railway earnings, commercial profits and output from mines and factories by an avoidable deficiency of locomotives and cars may greatly exceed all that the railways may be saved by further protracting the negotiations with the railway equipment and supply companies.

Patents and Royalties on Railway Supplies

THE EXTENT TO WHICH PATENTS and royalties upon patents will be recognized by the purchasing department of the Railroad Administration in buying equipment and supplies is still a subject of discussion. The purchasing department has asked the supply companies in presenting the data showing their costs of manufacture, to list separately the amounts paid by them in royalties. The question involved really has three phases, one of law, one of economics and one of morals.

The legal phase of the matter is concisely covered in an article by Paul Synnestvedt, the eminent patent lawyer, which we publish in another column. Mr. Synnestvedt summarizes two recent decisions in which the United States Supreme Court has passed upon the question as to whether certain patents must be surrendered for the use of the government without compensation. One of these related to the use of some of the patents on the Marconi wireless telegraph apparatus, the other to the use of some Curtis marine turbine patents.

While the government has the same right to commandeer patents as any other property, these decisions show that it cannot do so without providing for just compensation for the patentee. In other words, it cannot authorize one concern to make an article on which another concern owns the patents in such a way as to protect the former against a successful proceeding for damages by the latter. If the Railroad Administration should desire to get more devices of a particular kind than the owner of the patents could make, it could require the owner to let competing concerns made the additional number, but the competing concerns which made the device would have to pay the owner for the use of the patents.

As an economic matter, it is questionable if there would be many instances in which the Railroad Administration would

gain anything by buying more articles of a particular kind than the manufacturer owning the patents could make. If, for example, it should desire to buy only one kind of friction draft gear for 100,000 cars instead of buying from several concerns their different kinds of draft gear probably the concern owning the patents on the particular draft gear selected would be unable to supply enough of them to equip the cars as fast as the builders could turn them out. If, however, other concerns were asked to manufacture this particular draft gear it would be necessary for them to make changes in their organizations and plants which would take a long time and involve a large expenditure. Disregarding the element of time, since a manufacturer who has been making one kind of draft gear would have to incur the expense of preparing his plant and organization to make another kind, it is doubtful if he could make that other kind as cheaply as the concern whose business it has been to make it and which has built up its plant and its organization for that purpose.

Furthermore, the concern which owns the patents on a device and whose prospective business is based on making that device and making it as well as possible, has an incentive, to make it well and to cause it to give good service, which no other concern possibly can have. It always has been customary for the manufacturer of railway supplies to co-operate with the railway management which buys a device in using it properly and getting the best possible service from it. Almost every manufacturer of a patented device in this field has experts who are constantly engaged in teaching railway employees how to use it and in working with railway officers for the purpose of correcting any shortcomings and making any improvements in it that may prove to be necessary or desirable. While the owner of the patents on the device has an obvious incentive to render such service, any competing concern which was authorized to make it would just as obviously not have any such incentive. From an economic point of view probably it will be best for the Railroad Administration, in dividing its orders among the manufacturers, to buy from them, as far as practicable, the particular kind of devices they have been used to making.

As to the moral phase, the Railroad Administration has the right to make any suggestion regarding patents and royalties that may occur to it. It would not be fair, however, for it to use the position of monopoly which government control gives it practically to coerce railway supply companies into making extreme concessions which concerns in other lines of business are not required to make either to the government or to other customers. The government of the United States has given patent rights to inventors of railway devices just as it has given them to other inventors. It has permitted and encouraged companies to buy these patents and build up their businesses on them, just as it has permitted and encouraged other kinds of concerns to buy patents and establish businesses on them. In these circumstances, the railway supply companies are entitled to be treated by the government with the same consideration as other concerns which are making and selling patented articles to the government and other customers.

Undoubtedly, all departments of the government have the right to demand that the concerns from which they buy goods shall not, especially in these war times, charge the government excessive prices and profiteer at its expense; but plainly there is no reason in law, economics or morals, why the Railroad Administration, which is one branch of the government, should make demands of the railway supply companies which other branches of the government do not make upon other manufacturing concerns. The Railroad Administration does not contend that labor employed on the railways should be discriminated against merely because it is working for the railways under government control. It would, however, be as logical to make this contention as to take the position that concerns which are making equipment and supplies for the railways while under government control should be treated differently from other concerns with which the government is doing business.

Negotiations Regarding Railway Compensation

MANY PEOPLE, even including leading financiers in Wall street, apparently thought that when the railroad control law was passed what compensation should be paid to the railway companies during the period of government control and what they would be allowed to do with the money were practically settled. When, however, the representatives of the Railroad Administration, on the one side, and the representatives of the railroad companies on the other side, presented to each other the terms they had respectively drawn up for incorporation in the contracts, it became apparent that the question of compensation was far from settled. As the negotiations have progressed, the representatives of the two sides have drawn closer together, but regarding some very important matters they are still far apart.

The most important questions which have arisen relate, first, to whether the companies shall be given the maximum compensation provided for by the law; second, as to the use which the companies may be permitted or required to make of the surplus part of their guaranteed compensation, and of their income from outside properties; and, third, as to the policy of the Railroad Administration regarding maintenance.

The law authorizes the President, and he has authorized the director general, to pay to each company an annual return not exceeding the average net operating income earned in the three years ending June 30, 1917. When the control bill was pending representatives of the railways opposed this provision on the ground that it would not give the companies enough compensation, while some members of Congress opposed it on the ground that it would give them, or at least some of them, too much. Those who advocated the proposed basis, including the *Railway Age,* did so upon the ground that while it was not ideal, it represented the experience of the railways under regulation during the last three complete years for which data were available, and that, therefore, it probably was a fair and reasonable a basis to be used in a war measure as could be adopted. It is still contended in some quarters that to give the companies, and especially the more prosperous, the maximum provided by the law, would be to give them too much. Many lawyers believe that a company which carried the quest on into court could get judgment at a rate equivalent to that which it was earning when its railway was taken over; and most roads earned a larger return in the calendar year 1917 than the maximum compensation allowed by law. Therefore, the government might lose rather than gain by taking a stand which would force the companies into the courts.

If the companies should be given in the contracts the maximum return permitted by the law, some companies would have surpluses after paying their interest and dividends, while others would have surpluses after paying their interest. It has been the custom of most railways having surplus income to invest most of it in additions and betterments. Persons belonging to the radical school of thought contend that surplus invested in the properties really belongs to the public and, that, therefore, the companies should not be allowed to derive any return from it. The spokesmen for the companies, on the other hand, always have contended that surplus earnings belong to the companies and that, therefore, property created by the investment of these earnings belongs to them. They have said that some investment of surplus earnings must be made to offset concealed obsolescence, to provide unproductive im-

provements, etc., and have in effect conceded that no return should or even could be paid upon such investment; but at the same time they have maintained that the companies are entitled to earn and pay a return upon surplus invested in productive improvements.

This old question, which has been a bone of contention in almost every important hearing regarding rate regulation or valuation has now arisen to vex those who are negotiating regarding the compensation contracts. The two extreme contentions advanced are that the companies should be required to invest all their surplus compensation and receive no return on it, and that they should not be required to invest any of it and should receive a nominal rate of interest, say, 6 per cent on all of it that they voluntarily invest. One basis suggested was that they should invest 15 per cent of their total net income—including in this both their guaranteed compensation and their income from outside properties—without asking any return on this and that on all additional investment made by them they should be paid a return. The 15 per cent basis has not, however, been pressed, chiefly, no doubt, because, while some companies could invest 15 per cent and have substantial surpluses left, many others could not invest anywhere near this much and have any surpluses at all left.

It is difficult to see why income from outside properties should be considered in this connection. The government has not taken over these properties and assumed the risk and responsibility of operating them; the income from them was not considered in framing the compensation law; and no guarantee of the income from them has been made, or even suggested.

It would seem that the sensible thing to do would be to adopt some compromise basis and expressly provide by a saving clause that the basis adopted should not be regarded as establishing any precedent affecting management or regulation after the termination of government control. Probably the most reasonable compromise basis which could be adopted would be one on which the companies would be paid a return on all investment made from surplus compensation, but which fixed a low percentage of return, perhaps 4 per cent.

The law requires the government to return the physical properties to the companies at the termination of government control in substantially the same condition that they were in when taken over. If the government does not adequately maintain a railway it will be obliged, on the termination of control, to pay the company owning it a sum sufficient to offset the deferred maintenance. Suppose, on the other hand, that the Railroad Administration decides that there was deferred maintenance on a railway when it was taken over and that it must by making larger expenditures for maintenance, improve the property's condition during the period of control. It is being contended, in effect, by some representatives of the Railroad Administration that money expended in taking up deferred maintenance should be deducted currently from the guaranteed compensation of the company owning the property.

This does not seem to be logical. Since a company whose property is allowed to deteriorate under control is not to be recouped for its deterioration until the termination of government control, it would appear that a company whose property is improved by increased expenditures should not be required to settle with the government for this until the termination of government control. Each company should be paid during the period of control its current compensation regardless of current expenditures for maintenance. Nobody can tell until the termination of government control what condition any road will be in when it is returned to its owner. What shape each will be in will depend not merely on what shape the Railroad Administration may desire to keep or put it in, but also on the material and labor situation meantime.

If those conducting the negotiations regarding these contracts should attempt to settle all the difficult problems regarding the rights of the railways, on the one side, and the public on the other, which have been raised in time of peace, and which again will be raised in time of peace, they will hardly be able to agree on a basis which will prevent wholesale litigation. In order to prevent litigation from occurring instead of contracts from being made, it will probably be necessary for them to avoid trying to establish precedents for peace time, and to adopt a series of compromises which will carry out the intent of the railroad control law, which was that government control should be used solely as a war measure, and that the problems of peace should be left to be solved when peace returns.

Shall the Roads Return to Bessemer Rails?

RAILWAY ENGINEERS are much concerned over the reports which have been emanating from Washington during the last few days to the effect that it is going to be necessary for the railroads to go back to Bessemer rails this year because of the demand for the entire output of open hearth steel for munitions and ships. As pointed out in these columns two weeks ago the railways are now far behind in their rail renewal work for this season and although approximately 2,000,000 tons or two thirds of a normal year's output of rails is still undelivered on old orders the mills are now turning them out at the rate of only about 30,000 tons per week, or less than 30 per cent of capacity, and no new orders have been placed so far this year by the government which has notified the roads that it will purchase the rails required for them.

While the principal work now confronting this country is the winning of the war and all other activities should be made subsidiary to this, it is equally true that existing practices should not be disturbed unless such disturbance will contribute to the success of our military efforts. From this standpoint it is, therefore, important to consider the necessity for the transition from open hearth back to Bessemer rails.

Bessemer rails were rolled almost exclusively until ten years ago and large quantities of them are still in the track where they are giving good service. However, about 1908, high grade Bessemer ores suitable for rail making began to run out and the mills went into the manufacture of open hearth rails and they have readily commanded a premium of $2 per ton over the price of Bessemer rails because of their better quality. Following this transition some of the mills dismantled their Bessemer furnaces or converted them to other uses so that the Bessemer rail capacity today is only a fraction of that of a few years ago. Thus in 1916 (the latest year for which statistics are available) of the 2,709,692 tons of rails rolled, only 440,092, or 16 per cent, were of Bessemer steel. The depletion of the high grade Bessemer ores has continued so that a return to this class of steel can only be made at the sacrifice of service and of safety in the track.

The reduction in the Bessemer capacity of the country which has taken place also acts as a controlling factor, limiting any radical change in rail manufacture. At the present time only four of the large mills of this country which produced rails used by steam roads are equipped to roll Bessemer rails. One of these mills is located on the Atlantic seaboard where it has no accessible supply of Bessemer ores, while another mill can roll Bessemer steel only at the sacrifice of an equivalent tonnage of open hearth. This leaves only two mills in a position to roll Bessemer rails to any advantage, both of these being located in western Pennsylvania. Furthermore, the Bessemer furnaces of these mills are understood to be working practically to ca-

pacity, one of these mills being reported as operating both its Bessemer and open hearth plants to 98 per cent of capacity a week ago.

At a series of conferences between the representatives of the War Industries Board, the Shipping Board and the Railroad Administration, it was decided a few days ago that the Shipping Board, the Army and the Navy will take precedence over the railroads in demands for steel. Open hearth steel is naturally to be preferred for many forms of construction. This has undoubtedly led those departments which have precedence to ask for a large part if not all of their requirements in open hearth steel, taking almost the full output. One of the leading papers in the steel trade field stated last week that the government had so monopolized the steel output that "domestic consumers of steel and steel products will have no more chance to get steel for other than war material construction, than a fat missionary has at a cannibal feast."

It is entirely possible that an analysis of the uses for which the Shipping Board, the Army and the Navy desire steel will show that a considerable portion of the demand can be met just as satisfactorily with Bessemer steel. The use of Bessemer steel in ways such as this where it can be done without the sacrifice of safety or other important considerations will release a certain output of open hearth steel for rails and other uses where it has a marked advantage over Bessemer.

The roads supplanted Bessemer rails with open hearth steel several years ago at an increase in cost of $2 per ton because of the greater service and security from breakage. To return to Bessemer rails at this time would be a step backward which would be expensive and involve some increased hazards. No railway man will question the advisability of taking this step with all of its disadvantages if the demand for open hearth rail steel for military purposes is really such as to make it necessary, but it is important to ascertain whether the demands of the government can not be met satisfactorily while at the same time giving the railways the open hearth rails which they need.

In solving the rail problem, attention may well also be directed to the location of the mills with reference to the point of use of the finished product. As pointed out above the only two mills which could roll Bessemer rails to advantage are located in the vicinity of Pittsburgh, although large open hearth rail mills are situated as far west as Gary, Ind., and Pueblo, Colo. At the present time when munition work is requiring such a large percentage of the steel output of the country it is well to recall the fact that these munitions move in general to the Atlantic seaboard for trans-shipment, while rails are distributed throughout the entire country. It would, therefore, appear advisable from the transportation standpoint, when the facilities of the roads are taxed to their utmost, to so place all orders for steel products (which run into tonnage rapidly) that the minimum haul will be necessary, other conditions being equal. To illustrate the conditions at present, only a few weeks ago a Colorado mill was rolling munition materials for shipment east to St. Louis at a time when a mill at Gary, Ind., was rolling rails for a road in the southeast and an eastern mill was providing the rails for a line west of Chicago. For the period of the war it would appear advisable for the government, which has assumed control of the output of the steel mills, so to distribute the priority orders that the transportation resources of the railways will be conserved as far as possible. To protect the manufacturers this will make necessary the placing of prices for all steel products upon a comparable basis.

The railways need rails. They need them badly. They should not be required to depart from their existing standards of open hearth to Bessemer steel unless necessary. The rails should be produced as far as possible in those mills nearest to the point of final use.

Letters to the Editor

Duty of the Public to Punish Trespassers on Railroads

ALBANY, N. Y.

TO THE EDITOR:

Your recent editorials on the trespassing evils have served as a much needed "clarion appeal"; only the clarion ought to be louder. There has got to be a good deal of vigorous agitation before we shall see any signs of movement in this mountain of delay, disgrace and death. The state railroad commissioners, to whom you appealed last January (page 148) are indeed neglecting their duty, unless they hammer night and day at this subject until they get the lawmakers aroused; but much more is needed. Your reference to what the New York Central has done is very much to the point. I recall the vigorous address on this subject by Mr. Dow, the general safety agent of that road, reported in your paper about a year ago.* Mr. Dow and his assistants went right to the root of the difficulty—or one of the most important roots—by patiently interviewing, instructing and arousing the local magistrates along the New York Central lines in the State of New York. This is slow work, and not very inspiring; but if it is practicable and profitable for the New York Central, why not for other roads?

What is the use of going to Washington? This is a matter in which state autonomy is a well-settled principle; a principle on which all conservative men are agreed. In such a purely local matter we suspend the principle and substitute federal for state authority only because we find legislatures and state officers inefficient. But the extension of federal activities has long since made our Washington government top-heavy. (It is not a mere question of war-time emergencies.) We have a duty to avoid enlarging that unwieldy Washington machine. This is as important as to avoid building one big central railroad station for New York or Chicago which would clog its own working by its very bigness. Centralization cannot go on forever.

To put a stop to trespassing the federal government would have to appoint policemen in almost every town. Comparison may be made with the enforcement, by the Treasury Department, of the laws forbidding the illicit manufacture of whiskey. The revenue officers succeed in this only by the aid of a rigid tax law—which taxes the law-abiding as well as lawbreakers—and of a fairly strong public opinion.

Public sentiment ought to be educated in the matter of the trespassing evil; but public opinion needs such a *great quantity* of education that no man can guide the educational scheme for 48 states. It would be pretty safe to call it an impossible task. The logical way would be to concentrate on one state, say Massachusetts, or New York, and then educate by their example. The public indifference is largely based on that fundamental element in human nature which holds it right and proper that people who are ignorant, lazy or foolish should actually suffer the punishment that their ignorance, laziness and foolishness impose on them. This is brutal, but it is really what is the matter with us. To ignore this point is to misdirect our energy.

The problem, broadly speaking, is of the same class as that of the prosperous community succoring the poor; the wise helping the unwise to escape the consequences of their ignorance or wickedness. And this enterprise *always lags*. No city poor-fund is big enough to cure more than half the

*Address before state conference at Harrisburg, Pa.: *Railway Age Gazette* November 24, 1916, page 956.

poverty and distress that the almoners would like to tackle.

But while, for the reasons suggested, I believe federal activity in this line would be wrong, it is quite possible that if the authority of the cities and towns—say all the way from Albany to Buffalo—could be transferred to the state government, perhaps something might be accomplished. Everybody knows how local municipal officers have failed. Their shiftlessness is everywhere apparent. We must call in some authority sufficiently distant to be free from the influences of local sympathy; but the state capital is sufficiently distant; the federal capital is too distant.

Referring again to Mr. Dow, let us heed the lessons of his valuable experience, and go forward to accomplish the results that he accomplishes. He says that "a strict railroad anti-trespass law in every state in the Union, rigidly enforced, and augmented by a systematic campaign of education, conducted, not by the railroads alone but by some authorized public officer, to teach all persons that the law was framed for their own protection, and to save human life, and not for the mere purpose of guarding the railroad tracks against unlawful intrusion, would in time solve the problem."

This means that railroads not only have got to influence every public officer, to the best of their ability; they must strive to secure the necessary action by governors, or other state authorities, to have appointed an officer of the state who can and will inaugurate and carry on a systematic campaign of education.

W. H. Briggs.

Standards

Louisville, Ky.

To the Editor:

Anyone who knows anything about the manufacturing business is aware that in volume and duplication there is profit. Turning out ton after ton of the same manufactured article day in and day out, invariably means success and big dividends. Manufacturers are tickled to death when repeat or duplicate orders come in, likewise at the receipt of a requisition covering ten, twenty or a hundred thousand pieces of the identical same pattern.

Think what this means in the locomotive and car business alone, not to mention ships, etc. Small drawing force, no new engineering, an insignificant coterie of experts, no new patterns, no new designing—simply a case of order your machine numbers, one, two, three, just like a club breakfast, taking your choice by the card with little or no thought as to the details.

As an apprentice draftsman, I made many tracings of stationary tubular boilers, all of them labeled "Standard." For years they were turned out in this manner, until it seemed old Father Time would overtake me still standardizing. At that time there seemed to be a hazy understanding among us that once these standard boilers were completed the engineering force would automatically shrink. Time ran on and the standards multiplied, until we had eight or ten 60 in. boilers, ten or twelve 72 in. and scores of the smaller sizes. Slowly the deceitfulness of the title dawned upon us and we began to understand the thin significance of the word "Standard." Our force continued to increase.

When I hear standards discussed, no matter what the angle or by whom, it has the same deceitful veneering—camouflage, if you please—of the original variety. Don't misunderstand me. I am a firm believer in modern system, standard practice, etc., etc., and advocate it as far as it is practicable, but when it comes to a wholesale standardization of locomotives, cars, cranes, ships, machine tools and other ponderous pieces of mechanism, it is not to be done in this age, nor any other, except at a loss.

In order to standardize a locomotive intelligently, the conditions under which it is to operate must be considered, or else it will most certainly have to be rebuilt to accommodate those conditions. Requiring men to accomplish daily abnormal tasks in a definite specified schedule time without the fullest consideration of the conditions surrounding them, is unreasonable, to say the least. If these things we call conditions are ever standardized then there may be some hope—otherwise, there is none. The next Herculean job is to standardize the nerve racking ubiquitous human element and compel the operators in this section to perform exactly like those in another part of the country altogether. It is quite as easy and no more unreasonable to expect a standard prescription to do for this patient what it did for the other.

Brushing aside all obstacles for the sake of argument, the outstanding, foremost, dominating objection is that mechanical genius will receive its death blow. If all bright ideas and clever designs are first to pass censorship and suffer the knife, they will lose their flavor and become stale, flat and unprofitable before they see the real light. Put a ban, if you will, on inventive genius and you knock the props from many an enterprising firm and individual and instead of progression we will have retrogression, narrowness and dry rot. Let us see to it that this excellent, well meaning thing is not perverted and run into the ground. Let us take a firm stand and say, "Thus far and no further, Mr. Standard."

Millard F. Cox.

Who Wastes the Coal?

Greenville, Texas.

To the Editor:

The article written by "Master Mechanic" which appeared in the *Railway Age* for February 8, in which the writer attributes a waste of coal to the delayed movement of trains caused by despatchers, makes me think of how the different departments of a railway try to shift responsibility from one to another, when called upon for an explanation. Let some minor accident occur, such as the derailment of a few cars, not serious enough for a government investigation, and you will find the following results:

"Accident not caused by fast running."—Train and Enginemen. "Not caused by bad order cars."—Car Department. "Track in first class condition."—Track Department. "Cars properly loaded."—Station Help.

And so on down, if taken any farther, until there is not a reason on earth for the derailment. So it is with the waste of coal—lay it on some one else, if you can get by with it.

I suppose the reason for this practice is, first, fear of a reprimand, and second, each department trying to show that it is absolutely perfect; which is absurd. All make mistakes, from the management down, and this includes master mechanics and train despatchers. But in behalf of the train despatchers, I wish to say that after superintendents' and trainmasters' investigation of the standard delay report, which all good roads use, showing delays from five minutes up, they find the excessive delays caused by despatchers are few, and in nearly every case can be satisfactorily explained. When a good explanation is not given, the despatcher usually gets his—our officers are too well onto their jobs to overlook poor work on the part of the despatcher.

Present conditions are not what they were a few years ago; we now have larger engines handling more cars than most of our side tracks will hold; this causes saw-bys. A despatcher, to avoid a saw-by, often lays a train out at a certain point to avoid a worse delay at the point where the trains should meet if conditions were favorable.

The government has taken many men from all departments on every railway, and this has caused a shortage of help at many stations. Boys and girls new in the business are being used. This is responsible for some delays; a des-

patcher is often unable to raise the office he wants for orders; then, again, for "Safety First," he will refuse to work with an operator he has reason to fear. Many offices have been closed as far as telegraphing goes on account of the inability to secure men. This same condition exists in the engine department. A student fireman is sent out; because he is unable to perform a fireman's duties, he delays the train he is on as well as opposing trains. A despatcher cannot be responsible for these conditions.

Why do some engineers dislike to send a message advising condition of their engine when leaking a little or unable to handle tonnage, but instead will drag all the way over the division, delaying themselves and all opposing trains? This is true on many roads. Are they held responsible for a condition they cannot help? These cases are referred to just to show that there are other delays besides those caused by the despatcher.

P. CAIN.

Blunders in Handling Labor and the Solution

CHICAGO, Ill.

TO THE EDITOR:

One of the livest, if not the very livest, topic confronting the railroads and, in fact, our entire nation today is the labor problem, and, if handled with the greatest efficiency, much tact and diplomacy must be displayed immediately. The writer is a railroad superintendent whose reason for writing under the nom de plume of "Observer," is that he does not care to have the employees in different parts of the United States whom he shall mention, know that he is using their cases for illustration.

Back in the early nineties, I was a telegrapher on a Western road which had won a strike against its telegraphers the year prior to my entering its service. At the time I was employed I had no labor affiliations and paid no attention thereto, but in a few months my work took me to a joint office with another road where the telegraphers were well organized and had a very strong division in the town where I was located. I soon became a member of that division and enjoyed the association very much. Later I was transferred to another superintendent's division and the Telegraphers Journal followed me. It was here that I learned for the first time that there was any ill feeling on the part of the officers toward the telegraphers brotherhood.

I was summoned to the superintendent's office—a fellow telegrapher had informed the superintendent that I was a dangerous character because I was an "order" man. His first question was, "I understand you belong to the Order." My answer was "Your understanding is correct." He then asked, in a bull-dozing tone of voice, if I thought a man could work for the interest of that company and belong to the Order. My answer was that I had been giving the very best service I knew how for the past two years and knew of no reason why I should not continue—that I considered an O. R. T. man could be just as loyal as an O. R. C. man or any other Order man. The superintendent himself was holding a withdrawal card from the O. R. C. After some more bulldozing and humiliation, I was allowed to return to my position with the admonition that if I ever tried to influence any of the telegraphers of that division to affiliate with the order, I would be dismissed by wire.

This was furthest from my mind, but a few years later, after I had left the telegraph service and was handling terminal stations and yards, the road was organized and I became the first chairman of the schedule committee, all because I still felt that I had been unjustly censured when I was attending to my business with no thought of disloyalty toward the company.

After our schedule was granted and I returned to my station (at division headquarters) the superintendent—one in whom I had the utmost confidence and I also enjoyed his confidence—wrote me a curt pencil note to the effect that as system chairman for the telegraphers I had been furnished a card pass, but it was not to be used for the purpose of running around and further perfecting our organization. The facts were that the only time in two months that I had used the pass was in going to a badly handled station where the superintendent had trouble in keeping help, and working almost continually for two nights and a day to straighten out some bad tangles.

These instances are mentioned merely to show how the personal feelings of officers have been allowed to build up and encourage antagonism among the working class.

Some Correct Methods

It may be that some of the raps I received caused me to be more charitable when I got to the position of "Boss." If so, I should be and am thankful therefor. Early in my career, it was my good fortune to be associated at times, with a real humane "higher up" official. One of the strongest points in philosophy he gave me was this expression: "In dealing with the other fellow, no matter what his position, always remember that he is just as smart as you are and maybe he has you beat." His contention was that if he gave him that consideration, he would not make many mistakes in handling men. In dealing with labor problems, I have since used this as my basic principle.

The first terminal station I took charge of had but one switch crew and this crew had more or less trouble through careless work. A careful analysis revealed the cause—the foreman was addicted to excessive drinking. A subscription was taken among the various men at the terminal and he was given the cure. When he returned we had a battle to keep him away from temptation. We finally won by getting him in debt for a home and interested in a garden, also the raising of blooded chickens, in other words, we got him interested in something for himself.

Later I took charge, as yardmaster, of a congested terminal in the South where we were trying to handle 2,500 cars in a 500-car capacity yard. The switchman problem was a serious one. The second week on the job a typical boomer blew in and had a clearance right from Pocatello. We will call him "Red Wilson." On account of his experience he was immediately put to work in charge of an engine. His first night on duty, he came into the yard office, about 1 a. m., and demanded his time, saying he had sideswiped a cut of cars. I asked him if he did it purposely, and he said "Of course, not." I then told him he couldn't quit until morning and to come to my office when he went off duty at 7 a. m. and talk it over.

What an interview that was. I began by asking him to tell me of his experience, which covered service on 26 different roads. Always discharged and the offences not always dischargeable ones. We formed a partnership: he was to stick to me, at least until our congestion was broken up, and I was to stay by him. He had left a wife and five children in Denver. I got passes for them and what a reunion that was. I happened to be looking out of the window of the ticket office when they arrived—a careworn little woman and babe in arms and four others, the oldest a girl of nine years. The first thing he said when he took his wife in arms was "I have found a real boss and we are going to stay here and quit roaming around." Her answer, with tears in her eyes, was "I am so glad."

Pretty soon I began to get bills he owed at different places and it became necessary for me to appoint myself receiver for him—and it was some job. I took 40 per cent of his wages and apportioned it among his creditors and he and his wife seemed happy to think a way was being provided

to get rid of the nightmare of debt. We paid him out in 14 months, then made him buy a home with lots of garden and chicken yard space. He is there today but has three pieces of rental property beside his home.

Last Summer I was called back to that town to attend the funeral of an old friend. At the cemetery a neat looking little lady stepped up and spoke to me, saying she was Mary "Wilson" and was teaching school in a State college located at that place. It was 15 years since she had stepped off the train at that town, poorly fed and clothed. Now she was a highly refined young lady and one of our Nation's educators. When she walked away there was a feeling of pride in my breast, I could not help but think that I had contributed to that young lady's career by taking an interest in her father when he was a boomer switchman and I am satisfied the girl felt the same way about it and only spoke to me to let me know that my name was a topic in their household.

Ten years ago a yard that has since been placed in my jurisdiction, had a pretty hard name for its antagonistic attitude toward the company. The switchmen were unionized to the guards and spent a great deal of time in labor activities generally. We placed a yardmaster in charge who carried out my theory of getting all the men to own homes. You never saw such an improvement from the standpoint of wrecks and derailments. And now you never hear of one of those men taking part in union activities. They are too busy attending to their own affairs when off duty and do a better job attending to company affairs when on duty. This is the only yard I know of that operated last year—the first year of the 8-hour law—for nearly seven cents per car cheaper than the past nine year average.

It seems to me that the open forum, now being prominently mentioned in many of our leading publications, should find a large field among our railroad employers and employees as the plan provides for the employer and employee getting closer together. Surely we need that more than anything just now to insure a better understanding among ourselves.

When you can get the laboring classes to making payments on homes and saying, "This is my home," you have taken a long step toward solving the labor situation and stamping out anarchy. Therefore let us, as railroad officers, commence being our "brother's keeper" and inject just a little humane intelligence and toleration for the man in the lower rank, who, after all, may be our superior in ability were our positions reversed. OBSERVER.

Consolidation vs. Mikado Locomotives

ST. MARY'S, PA.

TO THE EDITOR:

In the discussion of standard locomotives it may be well to draw attention to the subject of relative efficiency of the different types of ordinary freight locomotives that are in common use with regard to their weight pound for pound. The present necessity of speeding up the delivery of supplies, munitions, etc., compels us to exert every effort to make every pound of material perform its most efficient duty in the shortest time, at the least first cost and at the same time at the least cost of maintenance.

This is particularly true of locomotives required at this time. For some years past American railroads have practically adopted the Mikado type (2-8-2) as the standard type of freight locomotive; this is an efficient machine from the transportation standpoint as compared with the hauling power of smaller locomotives that it has succeeded, but it is a decidedly inefficient machine when compared with the Consolidation (2-8-0) or the Decapod (2-10-0) types pound for pound of locomotive. The writer would like to draw attention to the article appearing on page 961 of the May 7, 1915, issue of the *Railway Age Gazette* under the title "Factor of Adhesion in Steam Locomotives" and to the contribution to "The Locomotive of Recent Developments" found on pages 109, 110, and 111 of the proceedings of the Central Railway Club of May, 1915.

Considering the Mikado (2-8-2), the Consolidation (2-8-0) and Decapod (2-10-0) types of the same weight in working iorder, exclusive of the tenders, the Mikado is only about 83 or 84 per cent efficient in hauling power. Comparing the three types with following approximate dimensions we have:

Type	Mikado	Consolidation	Decapod	Loss in productive weight and tractive power in the Mikado
Diameter of drivers	63 in.	63 in.	63 in.	
Weight on engine truck	25,000 lb.	22,000 lb.	22,000 lb.	
Weight on drivers	220,000 lb.	263,000 lb.	263,000 lb.	43,000 lb.
Weight on trailer truck	40,000 lb.	None	None	
Total weight in working order	285,000 lb.	285,000 lb.	285,000 lb.	
Cylinders	26 in. by 30 in.	28 in. by 32 in.	28 in. by 32 in.	
Approximate tractive power	52,000 lb.	62,000 lb.	62,000 lb.	10,000 lb.
Factor of adhesion	4.23	4.23	4.23	
Boiler pressure	185 lb.	185 lb.	185 lb.	
Valve gear, type	Outside	Outside	Outside	
Superheater (same type)	Yes	Yes	Yes	

Some objections have been raised to the driving axle load of the Consolidation which would be 65,750 lb., but the following prominent railroads have used axle loads as great or greater:

Erie Railroad .....(2-10-2) weight on drivers 335,500 lb., axle load 67,100 lb.
D. L. & W.....(4-6-2) weight on drivers 197,300 lb., axle load 65,700 lb.
D. & R. G.....(2-10-2) weight on drivers 337,500 lb., axle load 67,500 lb.
Pennsylvania .....(2-10-0) weight on drivers 334,500 lb., axle load 66,900 lb.

It is to be noted that the axle load on the Decapod would be 3,400 lb. less than that of the Mikado. The Consolidation and Decapod types are approximately 20 per cent more efficient pound for pound than the Mikado; each type having the same weight (285,000 lb.). In other words, considering the three types (2-8-2), (2-8-0), (2-10-0) pound for pound and the maximum tractive power to be 52,000 lb. and the same weight on the drivers we have:

Type	Mikado (2-8-2)	Consolidation (2-8-0)	Decapod (2-10-0)	Loss of the Mikado over the Consolidation and Decapod
Weight on engine truck	25,000 lb.	22,000 lb.	22,000 lb.	
Weight on drivers	220,000 lb.	220,000 lb.	220,000 lb.	
Weight on trailer truck	40,000 lb.	None	None	
Total weight in working order	285,000 lb.	242,000 lb.	242,000 lb.	43,000 lb.

The weight of either the Consolidation or the Decapod (242,000 lb.) divided by the excess weight of the Mikado (43,000 lb.) = 6.63 or for every 6.63 Mikado locomotives built we lose the use of one Consolidation or Decapod locomotive of 52,000 lb. tractive power. Carrying this to a conclusion in the purchase of 2,000 Mikado locomotives we could have built 2,354 Consolidation locomotives at a gain of 354 locomotives having 18,408,000 lb. tractive power.

Again, basing the cost of the three types at fifteen (15) cents per pound:

The Mikado would cost 285,000 × .15 =	$42,750
Either the Consolidation or Decapod would cost 242,000 × .15 =	36,300
A loss in the Mikado of	$6,450

—for the same amount of tractive power, viz., 52,000 lb.

The driving boxes, shoes and wedges, engine truck, rod brasses, crossheads, grates and many other parts can be made interchangeable with the existing heavy Mikado locomotive and at the same time eliminate the trailer truck with its attending upkeep.

Many examples of existing locomotives will show that a 63 in. driving wheel can be put under the firebox. The article in the *Railway Age Gazette* referred to above indicates that we can get sufficient wheel base to build a boiler large enough to generate sufficient steam for Consolidation or Decapod locomotives having a tractive power of 62,000 lb.

E. F. GIVIN,

Pittsburg, Shawmut & Northern Railroad.

Doings of the United States Railroad Administration

Regulation of Export Freight; Consolidation of Ticket Offices, and Other Retrenchments

WASHINGTON, D. C.

THE CAR SERVICE SECTION in Bulletin No. 12, addressed to all railroads, asks for detailed information concerning standard gage revenue freight cars of all types and initials on their lines as of May 1, 1918, and roads are asked to take care to see that all freight cars not actually retired from revenue freight service are included. The information is desired as to the number of home cars on foreign lines, the number of home cars on line, the number of foreign cars on line, private line cars on line, and total cars on line.

Expense Accounts of Railroad Officers

The United States Railroad Administration desires that expense accounts of railroad officers be itemized with more particularity hereafter than has sometimes been the case in the past. Director Prouty of the division of public service and accounts has addressed a circular on the subject to the regional directors, who are asked to bring it to the attention of the presidents and to have copies placed in the hands of all officers who render expense accounts. It is ordered that all expense accounts must be so itemized that the nature of the expenditure can be readily understood. For example, the account must indicate how much is paid for room, and separately for meals, and transportation should be shown in reasonable detail to show the division between expenditures for railroad travel, cab hire, etc.

Regulation of Export Shipments

The Car Service Section has issued Circular No. C. S. 2-A, prescribing regulations for export shipments, as follows:

I. In accordance with the provisions of the proclamation of the President of the United States, dated February 14, 1918, effective February 20, 1918, *all* articles of commerce shall require an export license from the War Trade Board for exportation via any port or border point to whatsoever destination, except to points in the noncontiguous possessions of the United States.

(For Canadian shipments, the articles enumerated in list appended hereto require individual license.)

II. You will immediately instruct all concerned that the furnishing of equipment for shipments consigned, reconsigned, to be reconsigned or intended for export shall be contingent upon—

(a) The issuance of said license.
(b) The presentation of license number.
(c) The marking of bill of lading "For Export."
(d) The waybill bearing license number. (License or partial shipment authority may or may not accompany waybill, but must be in hands of Collector of Customs at port of exit on or before arrival of freight at that port.)

III. Shipper's Export Declaration, of which there shall be four copies, must be delivered to the Collector of Customs at points of exit from the United States on or before arrival of shipment at such port. For shipments to noncontiguous possessions Shippers' Export Declaration in duplicate only is required.

IV. All shipments are further subject to such regulations and permits as may be required by the various railroad committees controlling export shipments.

V. The Car Service Section of the Division of Transportation of the United States Railroad Administration is authorized to permit the shipment of commodities intended for export prior to the issuance of an export license, if said Car Service Section shall be satisfied that there is storage room available, or that it is the custom of the trade to move such commodities to seaboard for storage or grading.

VI. With the exception of Paragraph III, the foregoing, for the present, will not in any way apply to any commodities for the exportation of which a special license has been or shall be hereafter issued by the War Trade Board, dispensing with the requirement of an individual license. Such special licenses are at present in force covering the following commodities:

(a) Any shipments made on Government bills of lading or consigned to the Navy Department, or War Department, or by or to any of the bureaus or other subdivisions thereof, the billing of such shipments to be marked "Export License RAC-18."
(b) Raw cotton shipped to Great Britain, France, Italy, or Japan, and their colonies, possessions, and protectorates. (Not Sea Island or Egyptian cotton, which requires an individual license.)
(c) All shipments of coal or coke.
(d) Shipments to Canada and (or) Newfoundland of all commodities *not* on the Export Conservation List of the War Trade Board, as appended hereto, unless otherwise specified therein.
(e) Shipments to all countries, other than Canada and Newfoundland, of all commodities *not* on the Export Conservation List of the War Trade Board, provided that value of no one commodity in the shipment exceeds $100.

VII. That a shipment from one consignor to one consignee, which shall exceed one carload, and which is intended for export, will only be permitted with the provision that the car or cars are loaded to full visible or carrying capacity.

Ticket Offices Consolidated

Director General McAdoo has announced that arrangements have been made for the consolidation of city ticket offices in the following cities in the eastern region:

New York City.	Reading, Pa.
Boston, Mass.	Williamsport, Pa.
Philadelphia, Pa.	Newark, N. J.
Baltimore, Md.	Cincinnati, O.
Wilmington, Del.	Columbus, O.
Pittsburgh, Pa.	Detroit, Mich.
Atlantic City, N. J.	Dayton, Ohio.
Buffalo, N. Y.	Cleveland, Ohio.
Syracuse, N. Y.	Indianapolis, Ind.
Rochester, N. Y.	Toledo, Ohio.

There will be five offices in Greater New York—four on Manhattan Island located as follows: 66 Broadway; Stewart building on Chambers Street, facing City Hall Park; somewhere in the lower 30's in the hotel district in that section; No. 114 W. Forty-second street, and one office in Brooklyn on Fulton street, the present offices of the Pennsylvania and New York Central. The rental of the offices vacated in these cities is approximately $1,070,000 per year. The rental of the consolidated offices will be $213,200 per year.

Arrangements are also being made to consolidate the offices in Chicago, St. Louis and Louisville. These are border line

points and require joint action on the part of the Eastern and Western districts. Similar consolidations will be made in the Western and Southern districts, and will be announced later.

Committee on Mail Transportation

The Railroad Administration has appointed a committee on mail transportation, reporting to the division of traffic, with Guy Adams, mail traffic manager of the Union Pacific system and chairman of the committee on railway business mail of the American Railway Association, as chairman. The committee is to study the entire subject of mail transportation and one of its purposes is to effect a greater degree of co-operation between the railroad mail service and the post office department. At the request of the Postmaster General, Rudolph Brauer, superintendent of the railway mail service at Omaha, has been appointed a member of the committee, and the other members are G. P. Conard, secretary of the Association of Transportation and Car Accounting Officers, who was also a member of the committee on railway business mail; H. L. Fairfield, manager of mail traffic of the Central of Georgia, representing the southern region; J. C. McCahan, Jr., manager mail traffic of the Baltimore & Ohio, representing the eastern region; and H. T. Mason, manager of mail traffic of the Frisco lines. The committee has its headquarters in the Southern Railway Building at Washington. The announcement says: "It is expected the committee will accomplish important economies and efficiencies in the handling of mails on the railroads.

Guy Adams

Guy Adams was formerly in the railway mail service in the post office department and for 20 years has been connected with railway mail service on roads in almost every part of the country. In this work he has been associated in one way or another with the installation of many of the important fast mail trains. He was born on December 5, 1868, at Abingdon, Ia., and was educated in the common schools. He entered railway service in 1882 as a messenger in the trainmaster's office of the Chicago, Rock Island & Pacific, and from 1884 to 1892 he was railway postal clerk. From 1892 to 1896 he was manager of the Rocky Mountain Official Railway Guide at Denver and from 1896 to 1898 general passenger agent of the Union Pacific, Denver & Gulf, and Denver, Leadville & Gunnison railroads. He was later traveling passenger agent of the Lehigh Valley, general agent of the Chesapeake Beach, and traveling passenger agent and division passenger agent of the Delaware, Lackawanna & Western. From 1904 to 1912 he was manager of mail traffic of the Chicago, Rock Island & Pacific at Chicago; from January 1, 1912, until December 1, 1913, manager of mail traffic of the Frisco lines, and since December 1, 1913, has been mail traffic manager of the Union Pacific.

A short time ago Mr. Adams gave 40 acres of a ranch in Colorado and organized the Railroad Men's Mountain Home Association to build a recuperation camp for convalescent soldiers and sailors who were formerly in railroad service.

Car Shortage Reports Discontinued

The monthly reports of car surpluses and shortages which have been compiled and published monthly by the American Railway Association since 1907, with the exception of a brief period when they were discontinued from motives of economy at a time of a large surplus, have now been discontinued at the instance of the Railroad Administration. While it has generally been considered that the report was a valuable barometer of the state of car supply, at least as reflecting comparative tendencies, it has also been regarded as an imperfect reflection of the exact conditions and the semi-monthly bulletins now compiled by the Car Service Section of the Railroad Administration showing the percentage of freight cars on lines to ownership, by individual roads and by groups, together with more special reports which are received, are considered to afford a better index of conditions. The shortage and surplus reports were regarded as defective for the reason that in times of shortage a shipper would frequently place orders with several roads at the same time in the hope of obtaining cars somewhere and the order would, therefore, be duplicated in the total shortage report. Also a surplus and a shortage would be shown at the same time on one road when at the time of compiling the report the surplus cars were in transit to fill orders.

Since the government took over the railroads the A. R. A. figures have not been published but they were compiled for January 1, February 1 and March 1, and showed net shortages on those dates respectively as follows: 89,995, 98,044 and 138,102. At present, according to reports received by the Car Service Section, the car supply situation is much easier than it has been for some time and except in a few localities shows a general recovery from the condition of last winter.

Freight Traffic Committee

A committee to control freight traffic passing through Potomac Yard, Va., Hagerstown, Md., and Hampton Roads, Va., has been appointed by the division of transportation of the Railroad Administration. The committee is to secure all necessary reports covering traffic through these gateways or held for any of them on account of congestion; will give particular attention to the handling of freight for the government, recommending any measures that will facilitate its movement, and will decide upon all embargoes affecting traffic passing through these gateways, placing them through the regional directors and keeping the Car Service section constantly advised. The members of the committee are: George R. Loyall, assistant vice-president of the Southern Railway, chairman, O. H. Hobbs, H. Billings, and E. T. Wilcox.

Advances to Railroads

The $500,000,000 revolving fund appropriated for the Railroad Administration by the railroad control law has already begun to serve its purpose. The first large withdrawal from the fund was $43,000,000 advanced to the New York, New Haven & Hartford to protect its maturing obligations, and since that time advances of various amounts have been made to roads which find themselves in need of small amounts to meet approaching maturities or for other purposes, because the amount of compensation which they are to receive from the government is still undetermined, pending negotiations on the form of contract. The advances in most cases are made as installments for account of compensation and are secured by collateral.

Car Service Section

The Car Service section has issued Bulletin 9-A superseding instructions in Bulletin 9 which conflict with the following: "Until further advised you will handle the

following private line refrigerator cars as hereby directed.

"Pacific Fruit Express cars will be delivered to the Union Pacific System, Southern Pacific (Pacific System), or as directed by the officers of the Pacific Fruit Express Company.

"American Refrigerator Transit and Dairy Shippers' Despatch cars will be delivered to the Wabash, Missouri Pacific, or as otherwise directed by the officers of the American Refrigerator Transit Company.

"Union Refrigerator Transit cars in series 1000 to 1999 inclusive to the Illinois Central, and series 40,000 to the Illinois Central or Mobile & Ohio, as most convenient. All other Union Refrigerator Transit cars to roads operating in Wisconsin.

"Fruit Growers' Express cars should be returned to the Atlantic Coast Line and Seaboard Air Line for fruit and vegetable loading.

"Santa Fe Refrigerator Dispatch cars should be delivered to the Atchison, Topeka & Santa Fe, and Frisco Refrigerator Line cars to the Frisco, or in accordance with directions of the officers of these companies."

Bulletin No. 13 has also been issued saying: "Because of the increased demand in connection with the war program for raw materials which are required in the manufacture of artificial ice, there is likely to be some curtailment in the supply of these commodities making it more essential that all practicable demands for transportation of natural ice shall be met. Will each railroad take such action as is necessary to give this question full protection."

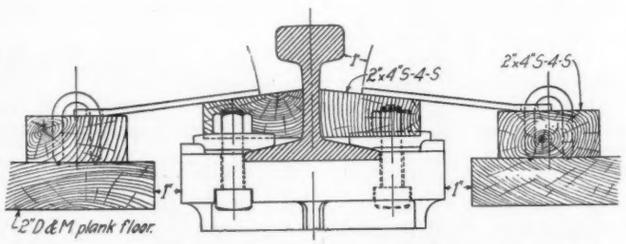
Protection of Railroad Property

Daniel B. Leonard, of Parkersburg, W. Va., has been appointed attorney for the Section on Protection of Railroad Property, and has been assigned to Toledo, Ohio, where a large number of cases of pilfering from freight cars has been discovered.

Minnesota Track Scale Specifications and Tolerances

Rules Adopted by the State Railroad and Warehouse Commission Contain Some New Provisions

THE MINNESOTA RAILROAD and Warehouse Commission has adopted specifications and tolerances for railroad track scales which become effective December 1, 1918, and which represent a large amount of constructive work on the part of the department of weights and measures in co-operation with the railroad scale manufacturers and the United States Bureau of Standards. Following the passage of a statute in 1907 placing track scales under the supervision of the state railroad commission, steps were taken to inspect them and a test car was purchased. The testing of scales throughout the state brought to light an unsatisfactory condition of affairs. It was found that few scales in the state were built on the same plan, foundations were commonly inadequate and the weighings were frequently far from accurate. In an effort to improve conditions the first



Manner of Applying Steel Weather Strips to Live Rails

step taken was the drafting of the first Minnesota foundation and scale setting requirement, which became effective November 13, 1912. A weights and measures department was created in the meantime, which assumed supervision over all weighing and measuring devices in the state.

Discussions of these preliminary requirements led to questions as to the strength of the weigh bridges, which, after conferences with the engineers of the railroads and the scale manufacturers, resulted in the adoption of the requirement that the strength of weigh bridges and cross I-beams should be determined by the engine loading. This was amended further in 1914 with requirements covering concrete construction.

Owing to a lack of uniformity in the practices of the scale manufacturers, particularly as to the manner of rating the capacities of scales, the formulation of a complete specification was urged in some quarters and after a study of the subject, in co-operation with the various associations of men interested in scales, a draft of a second specification was prepared in 1916. This was submitted to the railroads and the manufacturers and to various experts, and finally to the Bureau of Standards. After various hearings and revisions, an amended draft was submitted to the Railroad and Warehouse Commission which adopted it on November 6, 1917, to become effective on December 1, 1918. The specifications are based to a certain extent on those prepared by the United States Bureau of Standards, but go into greater detail. Important features of these specifications and items which differ from those contained in the specifications of the Bureau of Standards and features more or less new are abstracted below.

Abstract of Specifications

CAPACITY

Capacity Defined: "The capacity of the scale" shall be construed to be "equal to the weight of the heaviest loaded car it will weigh, provided that it will support a train of such cars passing over it without stresses being developed in the members thereof, which are in excess of those hereinafter specified." The scale weigh bridges and dead rail beams, when used, shall be deemed to be included in the term "in the members thereof."

Capacity Required: The scale shall have a capacity of at least 200,000 lb. (Following this a set of rules and formulae is given, indicating the methods by which the various parts of the scale may be investigated. The working stresses are the same as those given in the Bureau of Standards specifications.—*Ed.*)

SCALE LEVERS

Finish: The finished levers shall follow the pattern lines, as far as practicable, and shall not be unduly warped from those lines; they shall be free from blisters and large sandholes and other imperfections, and shall be brought to a reasonably smooth finish. Levers that are to be equipped with nose irons shall have those portions of the lever ends,

receiving them machined for the full distance over which they are to move.

Scale Pivots

Material: Scale pivots shall be manufactured from high carbon steel or special alloy pivot steel, which will give, when tempered, a maximum toughness, combined with that degree of hardness, that will insure the least wear under the heaviest loads to be applied.

Design: All pivots shall be designed and manufactured so that the two sides joining to form the knife-edge shall form an angle that will not exceed 90 deg., the sides of which shall be as nearly equal in length as possible.

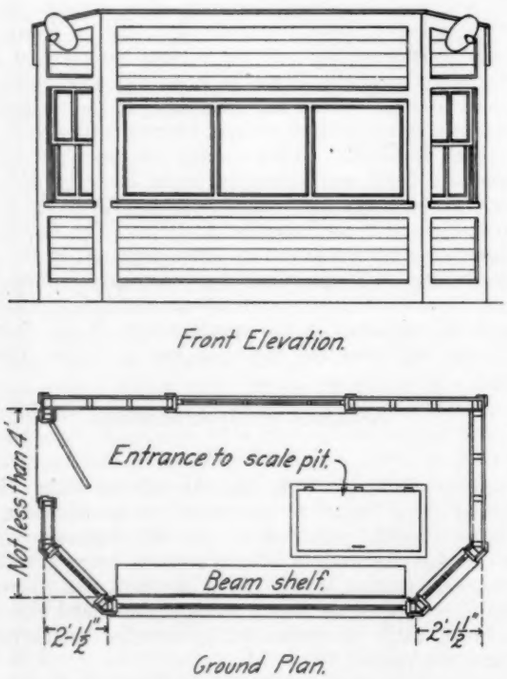
Nose Irons

Design: The design of the nose irons shall be such—(a) That the clamp screws or bolts will not make indentations in the lever, and shall be independent of the means provided for adjustment; (*b*) That these screws or bolts shall force and hold the nose iron against the lever in the same direction as it would be forced by the load; (*c*) That the movement of the nose iron shall be controlled by means of machine screws of United States standard size and thread, and be made from a non-corrosible material.

Bearings, Bearing Blocks and Links

Material of Bearings: (Same as for pivots.)

Mounting: All bearing steels shall be separable and interchangeable, and shall be firmly fastened in their respective



Standard Scale Beam House

seats by means of non-corrosive set screws of United States standard size and thread or other suitable means of fastening which will prevent their movement except for renewal. The use of interchangeable blocks that are self-alining having bearing steels fastened therein in accordance with the foregoing will be acceptable.

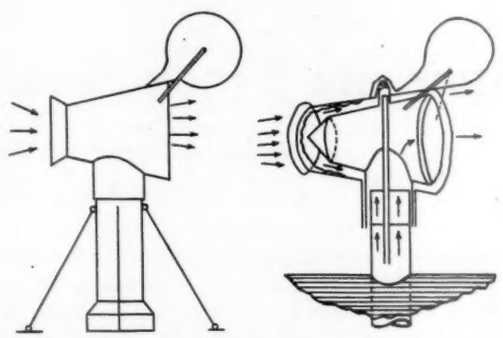
Loops and Connections

Design: They may be of any type desired, provided the radius of the portion of the bearing making immediate contact with the knife-edge and the radius of the eye of the loop shall not be less than the length of the longest side of the cross-section of the pivot to be used in the loop.

Weighing Beam Accessories

Main and Fractional Poises: The poises shall be designed so as to present the least number of recesses or projections in or on which dust or dirt may accumulate. Rollers or other means should be provided to secure as free a movement along the beam as possible. On type-registering beams the fractional poise shall be equipped with means to insure a positive stop at any 20-lb. notch, and a shoulder stop shall be provided to prevent the movement of the fractional bar beyond its proper travel in either direction. A substantial double hand grip shall be provided to facilitate the printing of the weight ticket with the least possible disturbance of the beam.

Marking: Each beam shall be given a serial number, which shall be stamped on the beam. The pivots and all



Elevation and Section of an Automatic Ventilator for Scale Deck

poise parts shall have stamped on them identification marks to show to which beam each belongs, and the pivots shall also be marked to indicate the proper position in the beam.

Beam Fulcrum Stand: The beam shall be set, or supported on the beam fulcrum stand provided with compensating bearings, and shall not be suspended or hung from hooks or supports.

Finish: The base of the stand shall be machined to the plane perpendicular to the axis of the upright portion of the stand and shall be suitable for the capacity of the scale in which the stand is to be used.

Trig Stand Loop and Beam Clamp: The trig loop and beam clamp shall be made of a non-magnetic material. The play of the beam in the trig loop shall be two per cent of the distance from the trig loop to the knife-edge of the fulcrum pivot.

Type of Weighing Beam: Scales that are to be used for spot weighing of cars or carload freight shall be equipped with a type registering beam of a capacity that will enable the entire load to be weighed in one draft without the use of additional weights of any kind. Scales that are to be used for motion weighing of cars or carload freight, either by hand, or by the use of an automatic recording device or machine, shall be equipped with a beam suitable for that purpose, and the beam and machine (if used) shall both be approved by the department before the scale may be placed in service.

Anti-Friction Points and Plates

Material: Hardened steel anti-friction points and contacts shall be provided to limit the lengthwise displacement of the pivot knife-edges on their bearings.

Design: Plates carrying the anti-friction points shall be securely attached to the levers. Hardened, smooth surfaces to oppose the anti-friction points shall be formed on the bearings. The construction and application of these points

and contacts shall be such that the contact that may be made between them shall be on the line of the pivot knife-edges, and will produce a minimum of friction. The clearances between the anti-friction plates and the anti-friction points shall not exceed ⅛ in.

Tolerances

The tolerance to be allowed on the test of all new railroad track scales shall not exceed 0.025 per cent of the test load applied. The same tolerances shall not be exceeded on the test of all railroad track scales over which grain or oil are to be weighed.

Commercial Scales: The tolerance to be allowed on the test of all railroad track scales used for the weighing of cars or carload freight (except grain and oil) shall not exceed 0.1 per cent on the test load applied.

Foundation

Depth: (a) All foundations must extend to at least nine feet below the surface of the ground, and shall include a concrete mat at least two feet in thickness, formed to and upon which shall be set the side, end, neck, and approach walls, except where solid rock formation is found at a depth of less than nine feet. (b) The pit floor shall, in all cases, be cemented over with a smooth coat of cement mortar with a pitch provided to a common point of drainage to prevent the formation of pockets in which water might stand.

Scale Beam House

Dimensions: A suitable and substantial scale beam house shall be provided. The minimum width of the house shall be four feet, inside measurement, and the minimum length shall be sufficient to allow for the installation of a full-sized beam shelf and regulation beam of the proper capacity for the scale. It shall be provided with front and corner windows, the construction to be such that no part of the beam shelf shall make a contact with the ends or front of the scale house. The windows shall be of a sufficient size and shall be placed with the lower edges about on a level with the top of the beam shelf, so as to give the weigher a full view of the scale and car when he is handling the beam.

Weigh Bridges

Platform Ties: The live rail platform ties (weigh bridge ties) may be made up of sound body timber of the hard variety, or of steel I-beams, or of cast steel, stand and tie combined cast in one piece. If the scales are to be used for motion weighing, no wooden ties may be used.

Live Rails: Scale rails shall be continuous without splices or joints. These rails shall be securely bolted to the cast iron pedestals, or fastened to them by means of malleable iron clips. If fastened by clips, each rail shall be equipped with not less than six rail anti-creepers, three spaced each way from the center.

Clearance Along Live Rail: The clearance along the live rail pedestals shall be two inches, which opening shall be protected from the weather and from dirt.

Steel Weather Strips: Steel weather protecting strips cut into lengths of not more than five feet, made from ¼-in. steel, 7 in. in width, shall be provided to protect the scale from the weather and dirt.

Motion Weighing: (a) On scales equipped with automatic recording machines for the motion weighing of cars or carload freight, "transfer rails" or "easer rail joints" of a type to be approved by the department shall be provided to introduce the load to the scale without undue impact.

(b) For motion weighing in train order, where cars or carload freight is to be weighed coupled and under engine control, electric signal targets shall be placed at least two train lengths from the end of the scale to indicate to the engineer the proper speed for the train. These targets shall be provided with three different signal lights and boards to indicate: Correct speed, Speed too fast and Speed too slow. The control for these signals shall be arranged so that they may be operated by the weigher, while he is doing the weighing, without leaving the beam.

Dead Rails and Car Puller

Dead Rails, When Required: (a) When the scale track is connected at both ends. (b) When a car puller is not used to handle cars over the scale and the scale is not located at the end of a stub track. (c) Dead rails to be constructed to same elevation as approach and live rails.

Dead Rails, When Not Required: (a) When the scale is located at the closed end of a stub track. (b) When a car puller is used to handle cars over the scale.

Light, Drainage, Ventilation and Cleaning

Light: Sufficient light for a proper lighting of the scale weighing beam, scale house, scale deck and scale pit shall be provided.

Drainage: Scale pits must be kept free from water. Where possible to construct it, a drain shall be installed, connected through a water-sealed trap to a sewer, cesspool, or to an outlet to natural drainage. In all other cases the drain shall be connected to an outside water-tight cistern, which shall be kept pumped out.

Ventilation: (a) All scale pits should be ventilated to meet the needs of each particular case, the object being to have the least possible amount of moist air in the pit, to prevent rusting of scale parts and structural steel. (b) (Suggestion by Bureau of Standards:) "One opening, or set of openings, shall be made in the deck of the scale, which are to connect with flues which terminate near the bottom of the pit, and that another opening, or set of openings, be made in the neck in the ordinary way." (c) We suggest a ventilating pipe be extended upward from the opening in the neck to the top of which pipe there be connected a ventilating hood, or jack, similar to the one shown in the drawing.

Protection from Corrosion

Painting: All metal parts of the scale and all structural steel shall be painted with not less than two coats of paint before delivery for erection, or before being assembled and erected. All surfaces coming into contact, where such surfaces are to be riveted together, shall be painted before being riveted.

Material: The material for the paint specified above shall conform to one of seven formulas and specifications: [given in the report.—*Ed.*]

We are indebted for the above information to W. E. Thompson, supervisor of scales for the State of Minnesota, who has been largely responsible for the preparation of the specifications abstracted above.

British Fliers Wreck Four German Trains.—The statement on aerial operations issued by the British War Office at London on April 20 says: "There was no improvement in the weather on Friday, but a certain amount of flying was done between storms of rain and snow, and reconnoissances were carried out at low heights. Four and a half tons of bombs were droped on the Throurout railway station and ammunition dumps and targets in the battle area. Only a few indecisive combats occurred in the air. None of our machines is missing. After dark our night-flying squadrons were very active. Sixteen tons of bombs were dropped on Armentieres, Warneton, Estaires, Bapaume and the Chaulnes railway junction. Direct hits were observed on four trains, one of which, judging from the explosion that was caused, was undoubtedly full of ammunition. All our machines returned safely."

The Southern Pacific's Snow Shed Problem

THE MAINTENANCE of uninterrupted operation through the Sierra Nevada mountains with a maximum annual snowfall of 65 ft. has led the Southern Pacific to spend over three million dollars in the construction of 29 miles of snow sheds in a total distance of less than 30 miles. A brief history of the development of these sheds and of the problems involved in their maintenance was contained in a paper prepared by George W. Rear, general bridge inspector of the Southern Pacific at San Francisco, Cal., and published in the Proceedings of the American Railway Bridge & Building Association for 1917, just issued, from which the following information is abstracted.

The following figures show the annual snowfall at various points along the line of the Southern Pacific where it crosses the Sierra Nevada mountain.

Station	Elevation	No. years record	Average seasonal snowfall
Blue Canyon	4,695 ft.	14	17 ft. 3 in.
Cisco	5,939 ft.	33	30 ft. 10 in.
Emigrant Gap	5,230 ft.	29	23 ft. 7 in.
Summit	7,017 ft.	44	35 ft. 0 in.
Truckee	5,819 ft.	35	16 ft. 0 in.

Truckee is at the eastern base of the range and gets less snowfall than stations at the same elevation on the western slope. This is due to the fact that the clouds move easterly from the Pacific coast and drop their moisture before getting over the range. The moisture is deposited in the form of rain to an elevation of about 3,500 ft., snow seldom extending below that height in this latitude. The maximum snowfall at Summit occurred in 1879-80 in which year 65¼ ft. fell, but this record was nearly reached again in 1890 when 64 2/3 ft. fell.

This snow falls in a period of about three months and very little goes off during the winter, but it keeps settling down until the average depth on the level is about 15 ft., although 26 ft., has been measured on the level many times. This makes the snow very heavy, with streaks of ice in it, and it is hard to handle with plows. Rotary plows are used in the territory at each end of the sheds where the snow-fall is less. On certain slopes and in certain canyons the snow piles up to great heights, well onto 100 ft. deep.

The snowsheds in this territory are built of wood and are of two general types: (1) Those designed to keep snow off the track only, (2) Those designed to convey snow and snow-slides over the track. There are 30 miles of these sheds in all, covering a territory of about 40 miles, there being some breaks near the lower ends where the snow-fall is less and where sheds are used in cuts only.

The first sheds were built in 1868, the frames being constructed of round timber cut alongside the track and the sheathing being cut in neighboring sawmills. They were of the pitch roof type and had the fault of crowding out of line when unevenly loaded with snow and were extremely hard to restore to line. The vertical clearance was only 17 ft. in 1868, but this provided nearly as much clearance above the cars as our present 22 ft. does above modern cars.

The sheds were no sooner built than complaints were made that they shut off the view and many efforts were made to overcome this objection. Windows were put in at the most interesting points and shutters that could be opened in the summer were tried, but for one cause or another all had to be abandoned, until the scheme of placing vertical slats something like a picket fence opposite the car windows was adopted. They are now put in wherever possible, except of course, where there is nothing to see in any case. This arrangement provides the maximum view and yet keeps out the snow.

When it became necessary to renew some of the sheds, the present flat roof type was developed and this has been in successful use for many years. One of its principal advantages is the ease with which it can be lined up if crowded over by the weight of snow slides.

There are approximately 100 million feet of lumber in these sheds and outside of damage from fire, their life is about 27 years. The fire risk is somewhat great, largely as a result of fires started from the outside. The large timber has been cut in this neighborhood but there is considerable brush, which takes fire, usually from fires left by careless campers. While the risk is, thus, somewhat great, the fire loss is small, owing to the precautions taken to prevent its spreading.

In the longer stretches of the sheds, telescoping sections 100 ft. long are built as often as feasible. These sections are mounted on wheels and are rolled back into enlarged sections of the adjacent shed during the summer, making a break of 100 ft. These telescopes divide the sheds into short sections, so that no great length is liable to burn at one time. It should be understood that a fire in these sheds burns the track ties and bends the rail in knots, destroying not only the shed but the track also.

To detect fires, a system of patrols is maintained, each patrolman reporting at an alarm box every hour. These alarm boxes are a little less than a mile apart and each report is registered automatically on a tape which is under constant observation at Summit station and is duplicated in the roadmasters' office at Truckee. When an alarm is rung in, the nearest fire train is notified and the main line is cleared of traffic. (The line is single track but, with sidings every two miles, little time is lost in getting trains into clear.) There are four fire trains in service during the summer, each consisting of a locomotive, a pump, and two water cars, having capacities of about 20,000 gal. These trains are constantly under steam and ready to start on an instant's notice. The locomotives are equipped with high pitched whistles, which are blown almost continuously while the trains are running, enabling workmen to get out of the way. It is reported that no fire has yet gotten by the fire train after it arrived at the scene of the fire.

In addition to these precautions a lookout station is maintained on Red Mountain at an elevation of 7,860 ft. from which point almost all of the 27 miles of the sheds can be seen, there being only two small sections hidden by spurs of the mountain range. At this lookout station two men are on constant watch, reporting by telephone every half hour. They have an engineer's transit mounted in their cabin, to which is attached an aluminum pointer which travels over a chart attached to a stand in front of the transit. There is also a line etched on the bay window of the cabin, which shows the lines of the sheds as seen through the transit. By training the transit on the fire the indicator will point out exactly what part of the shed is on fire or nearest to the fire, if it is not actually in the sheds.

These sheds are built to sustain 25 feet of snow, weighing 25 lb. per cubic foot, and, as the territory through which they pass has very little wind, and the snow is soft and sticky, great loads of snow rest on the sheds, especially in cuts. Some trouble was experienced in early years owing to the snow combing and extending a considerable distance out from the edge of the roof. This was overcome by nailing vertical boards about 8 ft. apart extending about 8 ft. above the eaves. In this range of mountains there are some snow slides, which usually carry with them large boulders. Where they are likely to occur special types of sheds with sloping roofs are provided.

SCOTTISH FISH TRAFFIC.—For the fish traffic carried by the Great North of Scotland from the middle of last June to the middle of September, 406 special trains with a total of 8,830 trucks were required.—*The Engineer, London.*

The Central Station in Rome

Italian Railways Under Government Management

The Value of Unified Direction Exemplified as a War Measure During Three Years of Struggle

By Our Special European Corespondent

HAS GOVERNMENT MANAGEMENT been justified in Italy, and particularly by the handling of the transportation situation during the war?

This question may be answered in the affirmative from the point of view that Italy's railroads really have done a great war service, have held together, and are still running after three years of mauling, of wear and tear. The question of whether they might have done better under private management on less money becomes absolutely academic in the light of the stake involved—the fate of the Italian nation. The result before us is that so far they have kept going, have never failed the nation—and no more can be asked.

Before writing this article I went one sunny winter's day to the chief of the operating department to ask him a few questions. This chief I found a very cool, pleasant-faced man standing over a desk piled up with telegraphic slips.

"If I had coal, these protests wouldn't be here!" he exclaimed, waving his hands lightly over his desk in comico-tragic despair. "They want me to move troops and freights all over Italy, and you can't run steam locomotives without coal, can you? It's been this way ever since the war began. You're an American. Can't you persuade your government to send us coal?"

The history of railroading does not give another example like that of Italy during this war. For nearly four years her railroads have been operated on an ever decreasing coal supply. The case of Russia cannot in any sense be compared to this, because so many other elements entered in railroading conditions there. In Italy every technical and financial phase of operation has been weekly, if not daily, subject to the sole consideration of her coal supply. Trains have frequently been run empty for long distances because there was no coal to run them loaded, and yet the cars, of military necessity, had to be at a given point at a given time. Engines have been laid up, idle, because there was no coal to run them. Trains have run at a ten-mile an hour speed because it took more coal to run them rapidly.

Before the war Italy, herself having no coal, imported some 10,000,000 tons, mostly from England. About one-third of this coal was used by the railroads and two-thirds went into industry and commerce and into the heating of private houses. By degrees that supply has been cut down, partly because the less coal used the more money kept in the country, and partly because enemy submarines have made coal importation by sea hazardous. At present (March), Italy is getting about 10,000 tons of coal per day, by hook or crook, or about one-third of her importation before the war, and this coal is of such poor quality as to be injurious to locomotives. All of her short-line railways have been stopped or their schedules reduced, main line trains are running but with military freight having the right of way and passenger trains are crowded until the aisles are jammed, and even standing room at a premium.

The coal situation is the only condition that has prevented Italy's railroads from giving in war times the same service as before the war. When it is remembered that the war has revolutionized many aspects of railroading, particularly as to carrying unexampled quantities of freight, of troops, and of performing these functions under peculiar conditions, the weight of this statement will be understood.

The whole question of government ownership, so far as general Italian opinion is concerned, is that Italy's railroad's

were better run before 1905, under the private companies, but that for this war it has been better to have them under government control. Italy is a free country, with much liberty of expression of opinion, and it is frequently regretted that before the war the private companies with their faster passenger trains and quicker freight deliveries, had not retained their management.

For war, however, the only solution is government control, and in European countries of near frontiers, with a possible enemy ever just over the border, government management of so powerful a war arm as the railroads must be maintained in peace times. In peace times there is too much political interference with the operation and management of all phases of the roads. Congressmen and senators have too many henchmen to please, have too many voters to satisfy among the employees, and when this is not the case they interfere in technical matters with impractical ideas when they do not speculate in railroad contracts and supplies.

From a war point of view there is also the danger of foreign powers using their moneys and influence to obtain control in peace times of this all-important military arm. On all the railroads of Europe Germany had her fingers, both financially and through her secret agents in the operating departments. As regards Italy's railroads, for instance, in the spring of

The State Railroads of Italy

1916 a great quantity of German-owned securities was turned back to the Italians, the Germans having need of money, and feeling no longer the need of such ownership. The securities were transferred through neutral Switzerland, and, it is stated, were for the most part picked up by the Italian government which, it is also said, will in the future exercise a closer control over the sale of her railroad securities. In passing, it may be pointed out that these securities have dropped but 25 points under their sales value of 1914, which indicates what the Italians think of their railroad securities as guaranteed by the government.

With all the hardening of the arteries that belongs to governmental conduct of affairs, with all the horrible and irrevocable inefficiency of the government bureaucrat, with all the dodging of responsibility which ends by tying systems hand and foot, with all the inevitable expenses accompanying government employ, it is claimed that government ownership of railways has been and is the best plan for Italy.

Railroad Conditions Peculiar to Italy

In order to understand what has happened and is happening in Italy from a railroad point of view, I think it is neesscary to tell a few salient elementary facts about the country itself, about the people, about national finances, about the war's conduct, and other national conditions with which the management of a railroad and its prosperity and efficiency must necessarily be linked.

Right off, it must be understood that Italy is not a rich country according even to European standards, and is a very poor country according to our conceptions of wealth. We Americans frequently forget how rich we are, rich in timber, water, soil, mines, climate, natural advantages over and natural protections from other peoples the like of which cannot be found elsewhere on the globe. In our pride we sometimes forget that it is the land we live in which is responsible for our prosperity rather than the people who have developed all this. It takes living abroad in war time, when nations in Europe are staking their freedom, their very existence, on a few paltry hundreds of tons of coal, or of iron ore, or of grain to realize how fully we are blessed with all these things. If we had had to go into this war lacking so much, as did Italy, we as a people might have tried to squirm out of it as a bad business, or having gone in, we might not have accomplished as much and with as light hearts as have the Italians.

From the point of view of Europe, Italy's national wealth is rated at somewhere around fifth in the list. The old pre-war figures used to be 20 billion dollars, with France 50 billions, Germany 80, England, Scotland and Ireland at 85, Russia 40, Spain 5½, and Switzerland 4 billions. The old estimated wealth of the United States was 200 billions, or ten times that of Italy. In the light of war financing, it is difficult to state just how poor any nation is. In measures of dollars Italy has already spent 5 billions on the war, about one-fourth or one-third of her previously estimated national wealth and there are those who claim she is about as rich as usual, with every prospect of doing well industrially if the war ever stops.

It has always been the kind of people who have inhabited Italy that have given her the importance she has always enjoyed. In ancient times, as at this very hour, Roman soldiers were fed on food from abroad. Then it happened to be the fertile Nile countries, now it is America. These people of to-day, however, are far different from the Romans. For one thing the Romans were severely just when not atrociously cruel, whereas the Italians are kind-hearted to a fault, careless of money, indifferent of social values, and yet liberty loving, proud as Romans, as jealous of freedom. This is why Italy can hardly ever become a Russia, why she is now bearing up under the immense strain occasioned by the military losses of last fall.

Geographically Italy is well located as an exchange transportation center, and as she was once rich four or five centuries ago, she will again be rich for the same reason. However, her area of land is a little less than the size of the States of Kentucky, Tennessee and Ohio, or a little more than that of Wyoming. With a population of 35 millions, her soil for agricultural purposes is on the average not so rich at its best as that of Kentucky, and her many mountains contain nowhere any of the coal, oil, iron and zinc treasures of Kentucky. Geologically, Italy came late upon earth, as indicated by her volcanoes. Her iron ore production is a meagre million tons a year, her lead and zinc but a quarter of a million, and she has neither oil or coal, those essential handmaidens of industry and transportation. During the

war some 15 million tons of lignite have been dug up, but it is so rich in sulphur and so poor in combustion that it is a purely war substitute.

Politically the Italy of today is hardly 50 years old. If one could forget the background afforded by her ancient history, the material refinements of the Middle Ages, the marvels of her architecture, the wonders of her art of past centuries, the Italy that existed four years ago might have been compared, materially, with any one of our old Southern States, where life ran along easily, was pleasant, with railroads tolerated and industry regarded as a vulgar Northern product.

Government ownership of railways in Italy has always been a political, as well as an industrial necessity. Politically, Italy has been rent by internal dissension for the past 1,500 years, with every city and every hilltop reared against its neighbor, and without any visible outward symbol to point out the necessity of union. Without going into the story of how Napoleon dreamed of uniting Italy, of how many patriots dreamed this dream until it came true after Garibaldi, during our Civil War, and particularly during the Franco-Prussian War, it may be stated that this union has been

On the Genoa-Spezia Line

slowly effected during the past 50 years in the face of intolerable financial struggles.

Through patient national economy, through sacrifices which are still remembered with bitterness, through the gradual inflow of tourist money, through moneys sent to the Holy See, through moneys sent home by emigrants living in North and South America, in France, in England, Italy's money finally before the present war had reached a par exchange value of that of countries with a gold standard.

Italy Just Beginning to Prosper When War Came

Just before the war Italy had caught her breath, nationally. She had ceased to look behind, was about to put into execution an ambitious transportation scheme which would have remedied some of her natural handicaps, increased internal traffic, improved her canals and ports, and prepared the way for reaching out after world freight, for making Italy a transhipping center for Southern Europe, the Mediterranean, and more distant points east and west, as in the olden days when Venice, Genoa, Naples and Pisa thus grew wealthy. German money and minds were helping in the scheme, and their teaching was worth having.

United Italy began business in 1870 with 1,202 miles of railway, 1,125 of which were mostly in the north country. But 77 miles of railway line were in the south of the peninsula and in Sicily. These railways have helped a lot in holding Italy together, in keeping united the various provinces and cities which were constantly prey to the suggestion, often coming from Austria, the old mistress of the Venetian provinces, that a change be made. The political effect of holding provinces together by good roads and rapid means of communication was one of the secrets known and applied by the Romans. The old truth was remembered by the new rulers of united Italy, who at once began improving the various railroad lines, spending money that was sorely needed in other directions. Mark Twain did not understand this truth and said so when he was, in the year 1867, visiting Italy of those days. "There are a good many things about this Italy which I do not understand, and more especially I cannot understand how a bankrupt government can have such marvels of turnpikes. Why, these latter are as hard as adamant, as straight as a line, as smooth as a floor, and as white as snow. And yet no tolls are charged.

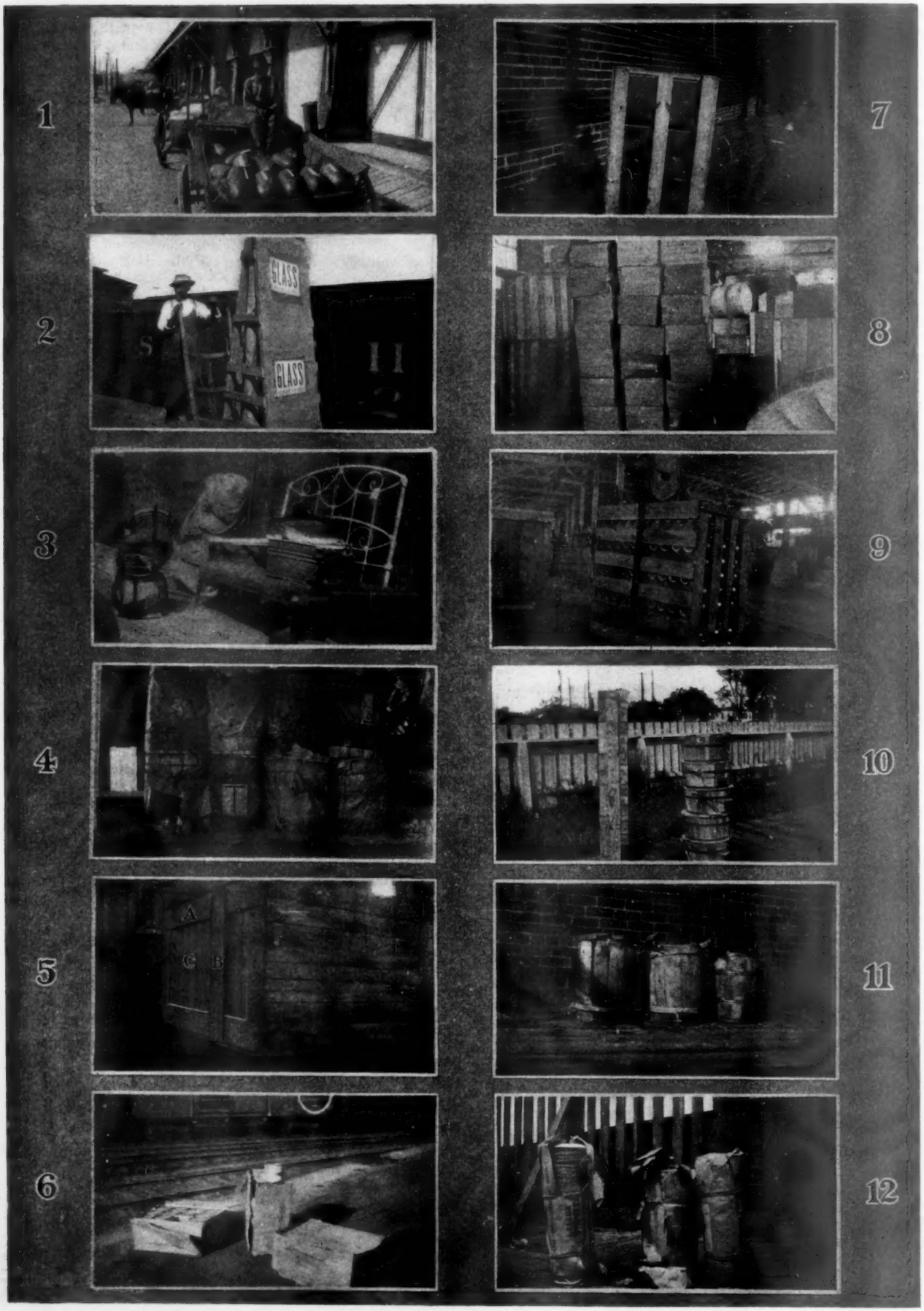
"As for the railways—we have none like them. The cars slide as smoothly along as if they were on runners. The depots are vast palaces of cut marble, with stately colonnades of the same royal stone traversing them from end to end, and with ample walls and ceilings richly decorated with frescoes. The lofty gateways are graced with statues, and the broad floors are all laid in polished flags of marble.

"These things win me more than Italy's hundred galleries of priceless art treasures, because I can understand the one and am not competent to appreciate the other. In the turnpikes, the railways, the depots, and the new boulevards of uniform houses in Florence and other cities here, I see the genius of Louis Napoleon, or rather I see the works of that statesman imitated. But Louis Napoleon has taken care in France there shall be a foundation for these improvements —money. He has always the wherewithal to back up his projects; they strengthen France and never weaken her. Her material prosperity is genuine. But here the case is different. This country is bankrupt. There is no real foundation for these great works. The prosperity they would seem to indicate is a pretence. There is no money in the treasury, and so they enfeeble her instead of strengthening. Italy has achieved the dearest wish of her heart and become an independent state, and in so doing she has drawn an elephant in the political lottery. She has nothing to feed it on. But it is an ill wind that blows nobody good. A year ago, when Italy saw utter ruin staring her in the face and her greenbacks hardly worth the paper they were printed on, her parliament ventured upon a coup de main that would have appalled the stoutest statesmen under less desperate circumstances. They, in a manner, confiscated the domains of the Church . . ."

Being an outsider, Mark Twain hadn't the time to study in his brief visit the political aspects of the effort to make Italy not a union of states, but a single, closely knit nation. The taking of the property of the Church, which was completed in 1870 by the taking of the city of Rome and the Papal states about Rome, was a measure of doubtful financial wisdom, but it helped to clear the way for a greater Italian nation, as in the same sense that the present war will, when successful, shove Italy forward into the Alps and along the shore of the Adriatic to the port of Trieste and thus complete her geographical entity. As a financial proposition, it looks very expensive, but in the long run her leaders feel it will be worth while. Indeed, it is part of a plan conceived by the patriots of 50 years ago and patiently carried out.

With the taking of Rome, Italy established her capital at Rome, took over the Papal railway connecting Civitavecchia, Rome and Naples, and year by year has increased her railroad system, sometimes under private management, sometimes under some form of government control, with the right of way for the most part being never surrendered, but merely leased to private companies for a relatively short term of years.

(To be continued.)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The Preparation and Handling of Package Freight

Illustrations from the Diary of a Freight Inspector—Views in Some North Carolina Freight Houses

By A. C. Kenly

THE PUBLIC, which is the happy term we all use in referring to everybody else in a lump, has a hazy idea of railroads. Through its eye, not its mind, it receives the impression of great affluence and unlimited wealth. It sees the magnificent terminals, the luxurious passenger trains, the endless trains of freight cars, the ceaseless activity, and the army of employees necessary for all this, all of which the public demands and all of which the railroads gladly give, and want to give, when they can earn enough to afford it; and which they give eagerly and fast enough, without waiting to be asked, when their receipts justify it. They are in trade to make a living out of it, just as everybody else is, and just as anxious to please their patrons. The public often looks with envy and unfortunately sometimes with hatred, at the president, vice-president and other officers who whirl by in private cars. The dear public should look at the real facts. Private cars are not castles of ease and indulgence but, rather, business cells of perplexing problems, troubles and worries, and many, many sleepless nights.

ILLUSTRATIONS ON OPPOSITE PAGE

1. Watermelons Clearly Marked
2. Glass Properly Packed
3. Household Goods (A Common Sight)
4. Wall Paper; from a Careless Shipper
5. Poorly Made Box for Meats
6. Fibre Board Boxes—A Kind Often Seen
7. Fibre Board Packages Well Protected
8. Fibre Board, Overloaded
9. Empty Cans Well Protected
10. One Mark Serves for Five Buckets
11. Bad Kegs and a Good One
12. Wooden Butter Dishes

One of the great problems now being considered by railroad men is the conservation of freight. Millions of dollars are annually paid by carriers in settlement of claims for freight which is lost or damaged. A few years ago, carriers, shippers and consignees seemed possessed with the idea that freight was fated to be lost or damaged; and that that was all there was to it. Now all three work together to prevent it. The improvement is slow, but sure, and the object of this article is to help the cause along. The carriage of freight is a partnership between the shipper and the carrier. The shipper must "tote fair" by properly preparing his goods for shipment. What a multitude of carelessly marked packages pass through a large freight house in a single day!

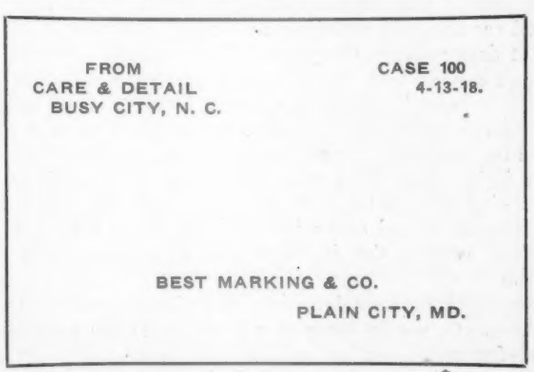
The proper marking of a box is a simple thing, yet what varied neglect we see. The example in the next column illustrates proper marking methods. It is always best to show no other letters, figures or words on the top, or on the sides that contain the shipping directions.

A good business man shows his name and address on his business envelopes: he will find it a great advantage to show this information on every package he ships; then in case of trouble, the carrier is able to promptly write him direct. The case number and date of shipment should be put on by all shippers who ship frequently to regular customers, as occasionally a shipment of a later date may arrive before a previous one; or shipments may become mixed in transit and be delivered at the same time; or a case may be lost. If the case number and date of shipment are shown on each package, it is an easy matter for consignee to keep perfect record of all cases received and in case of non-delivery of a case, to determine its contents.

Photograph No. 1 shows how a shipper of watermelons solved his difficulty by pasting on each melon a slip of paper bearing consignee's name and address. Another method is to scrape off part of the outer rind and mark with a pencil on the exposed surface. Still another is by scratching through the outer rind with a nail or other pointed implement.

Note the well prepared articles in photo No. 2. All glass parts and highly polished surfaces should be fully protected. Household goods, the poor relation of furniture, is another prolific source of claims. When you consider the large proportion of the articles shipped are accepted by carriers prepared for shipment as shown in photo No. 3, it does not require a Solomon to detect the cause. An article of commerce which causes carriers much wailing and gnashing of teeth, as well as pecuniary loss, is the cast iron stove. Some shippers still contend it is not necessary to crate stoves, but the crated stove is increasing all the time. Shipments in sacks also produce many claims. A poor quality of material is often used; sometimes, with heavy contents, the sack has broken by merely lifting it. Another source of trouble is leakage due to mouths not being properly sewed.

Photo 4 is a common scene; rolls of wall paper poorly protected. Photo 5 is a package affected by meat shippers; the boards marked *C* which form the top and bottom are nailed to the inside of the cross piece *A*. If you load heavy articles on boards marked *C* the pressure forces them down, leaving an opening like the one shown. It is surprising how often this happens, and it is a difficult break to repair. In this case, the cooper simply nailed the piece *B* across the opening.



The way to remedy the trouble is to drive nails through the sides of the case into the boards *C* when first packed.

Photos 6 and 7 are examples of fibre-board packages. This is a very good package when properly made, properly glued and sealed and properly used; and a very poor package when these conditions are not complied with. Photo 8 comes under the "net complied with" category, the principal trouble being that the weight of the contents is too heavy for the package. Photo 7 shows a most excellent method of shipping two or more fibre-board packages to one consignee. Photo 9 is an excellent method for shipping empty cans. Photo 10

shows an approved method of shipping numerous small packages to one consignee; it not only prevents the danger of a small package being overlooked or lost, but it reduces the cost of marking. By wiring the five half-buckets of candy together, it was only necessary to mark the name of consignee and destination once instead of five times.

A striking differences in kegs is shown in photo 11. If you were ordering a keg of nails and you knew *A* used the two kegs on the left and *B* used the one on the right, from which merchant would you buy? Photo 12 shows one way of preparing butter dishes for shipment; and the natural results.

The loading of freight in station order is an art by itself, especially when there comes along an unwieldy article like a harbor-light buoy, a gas engine, or a piece of long piping which must be loaded on the floor of car. It is gratifying to note the increasing study and time carriers are now giving to the loading of freight and its protection to insure its reaching destination in good condition.

The foregoing notes are not the suggestions and ideas of one man, but of many, widely separated, all working with a common purpose; and that purpose is the reduction of loss and damage to freight. If I have shown even in a slight degree the need of earnest co-operation of the manufacturers of containers, the shippers, the consignees and the carriers, I have not written in vain.

The Business Press and the Railway Question*

By Samuel O. Dunn

THERE HAS BEEN SOME DISCUSSION recently as to whether the existing facilities of our railways are adequate. I do not understand how any intelligent person can have any doubt regarding that matter. In every month for 21 months a net freight car shortage has been reported. The shortages have varied from 34,000 to 150,000 cars. This great car shortage has prevailed month after month in spite of the most efficient and effective operation of railway facilities ever known. We will gain nothing, but may lose much, by closing our eyes to the truth. We are confronted today with the fact that the capacity of our railways is not equal, or anywhere near equal, to all demands. The long-continued car shortage expresses only roughly, but in a general way it does express, the general transportation situation.

What can we and should we do about this situation? It cannot be cured during the war. Cannot it at least be remedied or ameliorated? There are only two ways in which it can be improved. One is by increasing the facilities. The other is by using them more efficiently. The railways are now being operated under the control of the government. Government control was adopted primarily to render it possible to increase the facilities and to operate them more efficiently.

There will be some increases in facilities made this year, but they will not be large in proportion to the existing demand for transportation service. In every effort the railways may make to enlarge their facilities they will encounter great difficulties created by the shortage of labor and of materials caused by the war. In consequence, while the Railroad Administration undoubtedly will this year spend substantial sums in enlarging facilities the conditions of war will render it necessary to expend them primarily with a view, not to making it possible for the railways to handle more business of a general character, but with a view to making it possible for them to handle more traffic whose movement is essential to carrying on the war.

*From an address delivered before the Business Papers Division of the Cleveland Advertising Club, Cleveland, O., on May 1.

Arm-chair authorities on railway affairs have been telling us for years that an enormous increase in the efficiency of railroad operation could be secured by consolidating the railways and operating them as a single unified system. Unified control of operation, whether secured by the voluntary action of the railways themselves, or by the exercise of governmental authority, was necessary in order to secure the transportation of the greatest possible amount of traffic essential to carrying on the war.

But it would be easy to exaggerate the increase in the amount of traffic in general which government control will make it possible to handle. Government control makes it possible to direct all traffic by the shortest available routes. But when business is so heavy as at present, the shortest routes soon become crowded, and it continues to be necessary to send business by all available routes, short and long. Government control makes it possible to operate all the terminals in large centers of industry as single units. But before the most advantageous co-ordination in the operation of terminals can be secured, they must be co-ordinated physically; and to bring this about will require time, labor and money.

Furthermore, it must be remembered that, primarily, the problem of the Railroad Administration and of the railways is not that of moving the greatest possible amount of traffic of all kinds, but that of moving the greatest possible amount of the kinds essential to carrying on the war. Now, in some cases, in order to move the greatest possible amount of essential traffic, it is necessary to so dispose matters as actually to reduce the total traffic accepted.

The Railroad Administration includes some of the ablest railway men in America, and they and the managers of the individual lines are devoting all their ability and all their strength to the solution of the problems presented. But it is a condition, not a theory, which confronts them. For almost twelve years the railroads of this country were subjected to a policy of regulation so unfair, so unintelligent and so destructive that, as was long ago foreseen and repeatedly predicted, their development rapidly slowed down, and finally came almost to a stop. Then suddenly, in 1916, there was thrown upon a railway system which had become unequal even to the normal requirements of the country the largest increase of traffic ever known; and within a few months the country entered the greatest of all wars, with the result that additional demands, heavy and abnormal beyond all precedent, were made. The present transportation problem of the United States is the joint product of those twelve years of prejudiced, punitive and repressive regulation and of conditions created by the great war; and if those charged with the operation of the country's railways are not able to make them meet all demands, this is due less to shortcomings on their part than to the fact that they are confronted with problems which no amount of energy and genius could, within a few months, or even a few years, solve satisfactorily.

The movement of cars while in the hands of the railways should and probably will be expedited by sending traffic by the shortest routes as far as may be practicable and by more unified and scientific operation of terminals. But cars are not in the hands of the railways all the time. They are in the hands of shippers and consignees a large part of the time, and upon shippers and consignees mainly depends how heavily they shall be loaded, how long they shall be held for loading and unloading and how long and how many times they shall be detained for reconsignment. The Railroad Administration can increase demurrage rates; it can reduce the time allowed for reconsignment; it can advance minimum carload weights; but unless it can secure the cordial and constant co-operation of shippers and consignees it cannot by any or all means and measures secure the greatest practicable efficiency in the use of cars. The co-operation of shippers and consignees during the last year has contributed

greatly to the increase of car efficiency; but they must co-operate even more cordially and energetically if the railways are to be enabled to render the largest practicable amount of service to the country as a whole.

In a meeting of this kind the question naturally arises as to what part, if any, the business press can play in helping to solve the transportation problems with which the country is confronted. Some of the business papers reach more especially persons who are directly engaged in the operation of the railways. This is true of the group of publications with which I am connected. Most business papers reach chiefly persons and concerns that come in touch with the railways mainly as users of railway service.

The duty of railway papers under present conditions is clear. The papers with which I am connected saw that the time had come when it was necessary for the government in one way or another, to come to the assistance of the companies to save them from financial disaster and to relieve them from the trammels imposed by the anti-trust and anti-pooling laws in order to enable them to operate with the utmost efficiency. They did not believe it was necessary or desirable for government officials to take the control of railway operation out of the hands of railway officers. When, however, government control was adopted, we recognized the fact that it was the duty of every patriotic citizen to do all possible to make it a success; and our papers have acted, and will continue to act, on that principle. The editors of our papers do not consider that loyalty to the government or the Railroad Administration requires that we shall refrain from criticising things done or proposed to be done by the Railroad Administration which we do not consider right or wise, any more than in the past we considered that we ought to refrain from criticising things done or proposed to be done by the railway companies which we regarded as wrong or unwise. Consequently, when the Railroad Administration entered upon a program involving the standardization of locomotives and the relinquishment by railway supply companies of patents essential to the existence of their businesses we did not hesitate to voice our opposition. On the whole, however, our policy thus far has been, and we hope and believe it will be possible for it to continue to be, one of support and commendation rather than one of antagonism and criticism.

Mr. McAdoo, the director general of railroads, is a man of ability. He labored effectively to secure legislation which would fix a fair basis for compensating the railways for the use of their properties; he has put able and experienced railway men in the most important places in his organization; he has given very little opportunity for politics or politicians to influence operation; and he is keeping uppermost the object of so operating the railways as to make them an efficient instrumentality for helping win the war. Our papers have tried to give him full credit for these things; we have tried to give full weight to the difficulty of his position and the magnitude of his problem; and we sincerely desire above all other things to help in this crisis to so influence the course of events as to make government control of railways a success.

The business papers outside the railway field approach the transportation problem from a different direction. Their constituencies are composed mainly not of those who operate the railways or purvey to them, but of those who use their service. The present transportation situation certainly is not a happy one from the standpoint of the shipper or traveler. It is, of course, entirely proper and highly desirable that the entire business press should investigate the causes of the present transportation situation, should criticise the managements of the individual railways and the Railroad Administration for all shortcomings with which investigation may show that they are properly chargeable, and should offer suggestions for the improvement of conditions which special knowledge of conditions in the various branches of industry render the editors of business papers competent to offer. But the business press should especially endeavor to make sure that all its criticisms of the individual railways and of the Railroad Administration are based on facts rightly understood and that its suggestions for improving conditions are the result of knowledge and good judgment.

Constructive, helpful discussion of the present transportation situation must be predicated on a frank recognition of the fact that railroad facilities are inadequate and that it will be impossible for a long time to make them adequate. It necessarily follows that the most constructive thing the railway managements, on the one hand, and the users of railway service, on the other, can do to improve the situation is to make the best possible use of existing facilities. The business press reaches the shippers of the country, and there is no more useful service it can perform than constantly to keep before its readers the reasons why it is their duty to the country and themselves to co-operate in every way they can with the railway companies in securing the heaviest possible loading and the most expeditious possible handling of freight cars.

Government control is making great changes in the organization and operation of our railways. The longer the war lasts, the greater these changes will be. The determination of the kind of system with which the old system of management and regulation shall be replaced after the war will have a most important effect upon the economic, social and political future of the United States.

Many believe government ownership will be adopted. Government ownership of railways means government monopoly of railways. The railways are the largest purchasers of coal. They are the largest purchasers of iron and steel. They are the largest purchasers of lumber. We cannot establish a permanent government monopoly of railroads without producing profound effects upon the business of all the concerns, and upon the employees of all the concerns, of which the railways are the largest customers. Every person in the country uses the service of the railways. This means that under government ownership every person would have to do business permanently with a huge government monopoly.

The establishment of a permanent railroad monopoly, if the monopoly were in private hands, would mean the concentration of an enormous power in the hands of those who managed the monopoly. If, however, the monopoly were in private hands it would be subject to government regulation, and this would limit its opportunity to abuse its power. If a government railroad monopoly were established the management would be under as much temptation—temptation in this case, primarily of a political nature—to abuse its power as the management of a private monopoly.

What means would those who sold goods to the railways, who used their service, or who worked for them, have of protecting their rights and interests? They would have but one means, and that would be to appeal from one branch of the government to another, from the Railroad Administration to Congress. Even if the officers of the government monopoly did not abuse their power, the very fact that they were exercising the power of a gigantic monopoly would arouse suspicions and apprehensions that they were abusing or intended to abuse it. People would then inevitably appeal to their representatives in Congress for protection. I am not saying anything based on theory. These very suspicions and apprehensions regarding government monopoly already have been developed under government control, although it has existed less than four months, and many classes of persons already have begun to beat paths to the offices of their senators and representatives in Washington to enlist their pro-

tection or their help in dealing with the Railroad Administration.

The adoption of government ownership of railways would establish a precedent for the adoption of government ownership of other public utilities. The railways consume from one-fourth to one-third of all the coal produced, and what would be more natural than for the argument to be made, and effectively made, that the government should produce the coal for its own railroads? You would then have the beginning of what probably would end in government ownership and operation of all the coal mines. If the government should not be satisfied with the prices made to it by manufacturers of cars, locomotives and other railway materials, what would be more natural than for it to be argued that the government should engage in the manufacture of these things for itself? This would be the beginning of what probably would end in a programme under which the government would engage on a large scale in the manufacturing business. In brief, the logical and inevitable result of the adoption of government ownership of railways would be the acquisition by the government of so many other industries that we would soon be embarked on a wholesale policy of state socialism. There is, as a matter of fact, no difference between government ownership and management of the railways and socialism itself, except one of degree. You cannot advance a single argument for government ownership and management of railroads which the socialist does not use in favor of the adoption of socialism. The socialist is logical in that he applies the same reasoning to all property. The advocate of government ownership is illogical in that he applies his reasoning only to some kinds of properties—these always being kinds of property which he does not own himself!

Since there is no natural or logical halting place between government ownership of railways and socialism, it is time for all of us to make up our minds whether we are going to advocate government ownership of railways as a long advance toward socialism or oppose it for the purpose of preventing a long advance toward socialism. It especially behooves the editors of business papers thoroughly to study and frankly to recognize existing tendencies and to discuss them upon their merits and with a view to the effects which if unchecked they will produce upon the entire industrial and political future of the United States. In my opinion, within a very few years there will be a great struggle in this country over government ownership of railways, and the outcome of that struggle will largely determine the economic, political and social future of this country. Those who favor government ownership will really be favoring socialism with all that it would involve. Those who oppose government ownership will really be opposing socialism with all that it would involve.

The business press can make itself one of the most potent and effective agencies for presenting to the public not only the arguments against government ownership, but also the arguments for a new, fairer and more constructive policy of government regulation.

AMERICAN ENGINEER IN CHINA IS RELEASED.—George A. Kyle, of Portland, Ore., the American engineer who since March 5 has been held captive by Chinese bandits in the province of Honan, China, has been released, according to advices to the State Department from the American Legation in Peking, forwarded to the Siems-Carey Railway & Canal Company of New York. Two other Americans and a Chinese engineer previously had been freed. The message to Mr. Kyle's employers here gave no details of how the captive's release was brought about. He was the chief engineer of the Siems-Carey Company and was engaged in making a survey for 2,600 miles of railroad when captured with E. J. Pursell, another engineer, and a Chinese assistant.

Idle Labor in War Time

IN A LETTER RECENTLY sent to all agents of the Illinois Central system, T. J. Foley, vice-president in charge of operation, calls attention to the surprisingly large amount of idle labor which he observed during a recent trip over the southern lines of the road at a time when there is an acute shortage of labor for railway purposes. He suggests that idleness on the part of Americans at this time is equivalent to disloyalty and believes that an aroused public sentiment in each community against idling will have a most salutary effect. Mr. Foley's letter reads in part as follows:

"On my trip I observed great numbers of both white and colored men on our trains, traveling from place to place. I wondered why they were traveling around at this season of the year, when their services are so badly needed on the farms and in the manufacturing industries, as well as on the railways. Passing through the towns, I saw enough idle labor standing around the depots, gazing at the trains to supply the needs of this company, as well as the needs of a good many farms and industries. At one town of approximately 1,200 inhabitants I counted 55 colored men standing at the depot. At another town of about 5,000 inhabitants I counted 165 colored males, including boys, young men and middle aged men. At another place of 500 inhabitants I counted 23 at the depot, standing around with their hands in their pockets, apparently doing nothing whatever. The thought occurred to me that about 10 per cent of the labor supply of the South is idle at this critical time.

"The one job which we have on hand at present is winning the great war, and it follows that every person who is able to work, but who is not at work, is a liability instead of an asset to his country, and should be held up to scorn. My interest in this matter is just like the interest of every other loyal citizen anxious to do his full duty by his country. I firmly believe that a strong public sentiment against idlers in each community would make it so uncomfortable for the idlers that they would be driven to work. Some of them would drift into agriculture, others into manufacturing industries and the railroads would get their share. This is a free country, but it will not remain free unless every person exerts himself at this time to the very limit of his capacity. If idling is to be permitted, it ought not to be permitted now, and this should apply to the rich as well as to the poor. You should direct the attention of local authorities and leading citizens to the idlers around the depots and do what you can in every proper way to arouse public sentiment against idlers. If there ever was a time to attack idlers, it is now. If there ever was a time when every person, regardless of age, color or station in life, should be at work, it is now. Rest and leisure should be deferred until after the war has been won, until after individual freedom has been enthroned and made secure for all time. At present, a part of the business of every community should be to see that everybody is at work.

"These are my individual views. If you can make any use of them, I hope that you will do so. We need labor on the railroad and need it badly. The problem will be solved when the idlers are driven to work. Just as a matter of information, I would like to request you to acknowledge receipt of this circular and give me the benefit of your views; also to advise me approximately the number of idlers in the towns and communities served by your respective stations."

THE PERIODICAL "LA TECHNIQUE MODERNE" suspended its publication after its issue of August 1, 1914, because its managers, editors and the majority of the contributors had been mobilized. After three and a half years of suspension the Technique Moderne has resumed its publication. The *Railway Age* is advised that the Technique Moderne would be pleased to receive and publish articles bearing on scientific and technical developments in this country.

Speeding Up the Operation of Terminals

A Series of Practical Suggestions of Ways to Take Up the Slack and Increase the Output of Transportation

By M. E. Burk,

Transportation Department, Norfolk & Western, Roanoke, Va.

A GREAT EFFORT has been made since our entrance into the world war to formulate general policies for railroad operation. Meetings have been held where the necessity of absolute co-operation has been emphasized, but few definite plans have been given to the local officers to guide them in ways of increasing their efficiency. In fact, the general officers have been so crowded of late with outside duties that they have not been able to spare even the time for their usual supervision and criticism. It is found that terminal delays to trains are increasing. The same is true of the time between terminals. The former is usually accounted for by terminal congestion and the latter is credited to motive power not being kept up to as high a standard as formerly and to inferior fuel. There is no question as to the partial truth of these explanations, but they, by no means, fully cover the situation.

Assuming that the proper car was given the shipper, that he loaded it to capacity plus 10 per cent and did not take his good time in so doing and that the agent did not fail to provide the proper billing, no special provision has been made to assure a continuous movement of the car (barring accidents). It would be practical for each road to use a set of symbols in the form of conspicuous cards with letters large enough to draw the attention of every yard checker, car tracer and yard conductor, this card naming the last terminal on the system to which the car is to be taken on a through freight schedule.

Another splendid opportunity for increasing efficiency is offered in standardizing yard organizations. It is surprising to note cases where a yard on one division will be much further advanced in its methods of operation than on another (this is often true in neighboring yards on the same division). One yard will use an elaborate, up-to-date tag system, while the other will still hold on to the old method of chalking cars; one yard will use semaphores for switching purposes, while the other still wastes one or two brakemen per crew in forwarding signals for long trains. The clerical organization in yards is also far from being standardized, thus preventing the general officers from being able to measure the degree of their efficiency. Whenever you see a yard congested most of the time, you can almost always feel assured that it has no organization to speak of. If the ever-increasing demand for transportation is to be met successfully, the railroads will have to keep complete records of every movement in the yards for it is here that the additional efficiency is to be sought. Much help can be gained from a daily record showing the time an engine is put on and taken off the "spark" track, the time it is put on the train, and the time the train pulls out of the terminal, requiring the terminal trainmaster or general yardmaster in charge of the yard to explain any delays. The receiving and despatching of trains in any yard of considerable size ought to be entrusted to a responsible employee. It is surprising how often such an important duty is left to an inexperienced clerk while the man really in charge of it is occupied elsewhere.

Close co-operation between the chief despatcher's office and the yard office is absolutely indispensable to the efficient handling of trains in and out of yards. The yard office must be kept constantly informed of the number of trains, the time they left the initial terminal, the probable time of arrival and their consist. If anything unforeseen happens and the trains are delayed on the road, such information must be given to the yard at once so that other arrangements may be made.

The bunching of trains in and out of terminals is a very wasteful practice. In most cases it is the result of shortsightedness on the despatcher's and yardmaster's part. It can almost always be avoided by running uniformly loaded trains, properly spaced. While there is no rule prohibiting the running of trains of the same class around one another, it is not being practiced because the crews object to it. Trains uniformly loaded and properly spaced will eliminate bunching in a terminal. As it is, the yards are now taxed to their utmost. When three or four trains are waiting to be let in, with a passenger train often due at the same time, the question no longer becomes that of the proper disposition of those trains. The only problem is to get them out of the way. This usually culminates in a congested yard. The necessity of keeping the classification yard open cannot be over estimated and this can only be accomplished by a proper combination of judgment exercised in the despatcher's office and by the yardmaster, the former spacing the trains and keeping them uniformly loaded and the latter having a competent man to handle the incoming and outgoing trains, if he cannot attend to it himself. Yardmasters do too much clerical work which can better be done by a regular clerk at decreased expense.

The increase as well as the change in the character and requirements of the present business have led some chief despatchers to wrong conclusions. They seem to think that reducing the tonnage rating of engines will expedite the business and fail to realize that the reverse is true, that the actual moving of freight between terminals is only about 15 per cent of the problem and that by decreasing tonnage ratings the number of trains is automatically increased, which, under present conditions, means the use of inexperienced road crews —all of which contributes much to the delays at water and fuel stations, and for that matter, all over the line. Any trick despatcher will exercise better judgment when handling fewer trains.

At this point it is apropos to mention that the train sheets are analyzed less than any other record, yet they contain the most valuable information relative to efficiency in train operation. A study of train sheets will show plainly whether the despatcher is careful enough in fixing the meeting points for trains, whether the conductors are losing time at stations in calling for their orders and whether the station operators are alive to their responsibility. An analysis of train sheets will also show whether or not the trains are spaced properly and whether or not the crews are held unnecessarily long at the terminals.

Not only is the practice of reducing tonnage ratings wasteful from a road standpoint, but it also is a hardship on the terminals. Terminal congestion is directly proportional to the number of incoming and outgoing trains. It would be more profitable, therefore, to change the policy of reducing tonnage to that of increasing supervision. Each division should have enough trainmasters and engine foremen to be able to follow up the operation of trains closely. The custom

formed on many roads of using the trainmasters and engine foremen to "chaperon" private cars should be abolished. A trainmaster, as a rule, does not belong on passenger trains. There are too many freight crews to look after. As matters now stand, any unusual delay is taken up through correspondence by some office man, and the answers matched up and filed away for future reference.

In line with a search for greater efficiency, much work can be done to advantage in bringing about greater harmony between the mechanical and yard organizations. The number of orders for power cancelled by the yard office every 24 hours is a criticism of the care exercised in handling this important part of the work. The difference between the time estimated to get engines ready and the actual time they are made ready for service is so great as to call for more attention. Both of the above can and should be lessened through careful and continuous analysis of the practices.

A daily record of cancelled orders will lead the man ordering power to keep more closely in touch with the general situation so that he can order power when needed and be ready to use it as soon as it is furnished. A similar record of the "hits and misses" credited to each roundhouse foreman who estimates wrongly the time an engine will be made ready for service will cause him to learn the situation before reporting it. His information will then offer a practical basis for the yard to work on. As it is, the yard now orders a whole day's supply of engines at one time. The roundhouse foreman tries to fill these orders as soon as received so as to be able to report to his chief, "No unfilled orders on hand."

The bunching of power by the roundhouse people is due primarily to two definite reasons; (1) Trains not uniformly loaded and properly spaced arrive in bunches. When such is the case, the roundhouse turns them out in the same way. The solution of this lies with the chief despatcher and the terminal trainmasters. (2) Since the eight-hour law went into effect, necessitating three shifts during 24 hours, three distinct periods can be noted during each 24 hours when the roundhouse does not turn out much power. To study the situation more closely it will be necessary for each master mechanic to plot an hourly record of the daily output of engines for a week or so. He will soon become convinced that during the changing of shifts there is always a period of unproductiveness. This can be overcome, as far as maintaining a uniform output of engines, by getting the shifts to overlap each other. The difference in overtime will be more than offset by the extra use the company will make of its power.

Conclusions

To assure additional efficiency great enough to offset the ever-increasing demand for transportation, it will be necessary:

(1) To standardize all similar organizations of the system. Its effect will be twofold: (a) a man from one office can be sent to a similar office elsewhere when occasion arises and be qualified to fill the requirements; and (b) the management will be in a better position to check up the efficiency of each organization, the unit of requirement being the same.

(2) To emphasize the fact to all concerned that the "Average" is an imaginary quantity, and that it, therefore, does not represent actual operation. It is intended only as an auxiliary method of calculation. The average would be a fair enough figure to work on if the railroad dealt with only one person—the good practice would then offset the bad. As it is, the loss caused to one from bad practice is not balanced by the gain resulting to another from good practice. The individual practice, therefore, must coincide very closely with the imaginary average.

(3) To rearrange, where necessary, all reports pertaining to operation so as to show individual responsibility. Tabulate such information in the proper way so as to enable the management to credit one and discredit the other, making this policy known to all concerned. The initiative of the average railroad employee is at a very low ebb due to the fact that each feels that he is lost in the crowd. A fair and prompt recognition of individual ability is the only solution to this condition. Too much shifting of responsibility is a direct outcome of it. A railroad management will have to recognize the individual if it wants individuality.

(4) To determine the merits of each practice on the system by its relation to other practices. Too much wrong economy is found almost everywhere, owing to the fact that each official attempts to make a showing for his division, disregarding the fact that his apparent gain may be more than offset by a loss to the company elsewhere.

(5) To remember that the conditions which the railroads are now facing are different from any previous experiences and that it is not strange to find many of the old practices not efficient enough to meet the present situation. Some of the older officers are very sentimental when it comes to changing practices. It is up to the management to take the necessary steps for immediate readjustment wherever this has not already been done.

(6) To shift the center of interest from the road to the yards and terminals, realizing that they comprise from 70 to 80 per cent of the problem.

(7) To reduce as much as possible the number of freight trains. See that there are no avoidable delays to trains on the road but do not try to reduce tonnage ratings to shorten time between terminals. Advocate and enforce uniformly loaded and properly spaced trains.

(8) To see that the mechanical department takes charge of each engine as soon as it is relieved by the crew; that all repairs are made to the engine before it is put on the "spark" track (too much delay to trains in terminals is caused by the mechanical department having to work on an engine after it has been put on a train, thus resulting in overtime to the engine and train crews, as well as in tying up the yard); and that the engine is taken off the "spark" track and put on the train without delays.

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(9) To solve the question of fuel, not by getting coal, but by saving it. Very few roads are keeping a scientific check on the fuel used. There seems to be little realization of the fact that the improper use of fuel is not only expensive in wasting coal but also in wasting time on the road. The damage done to an engine whenever a fire has to be cleaned on the road is known to every mechanical man.

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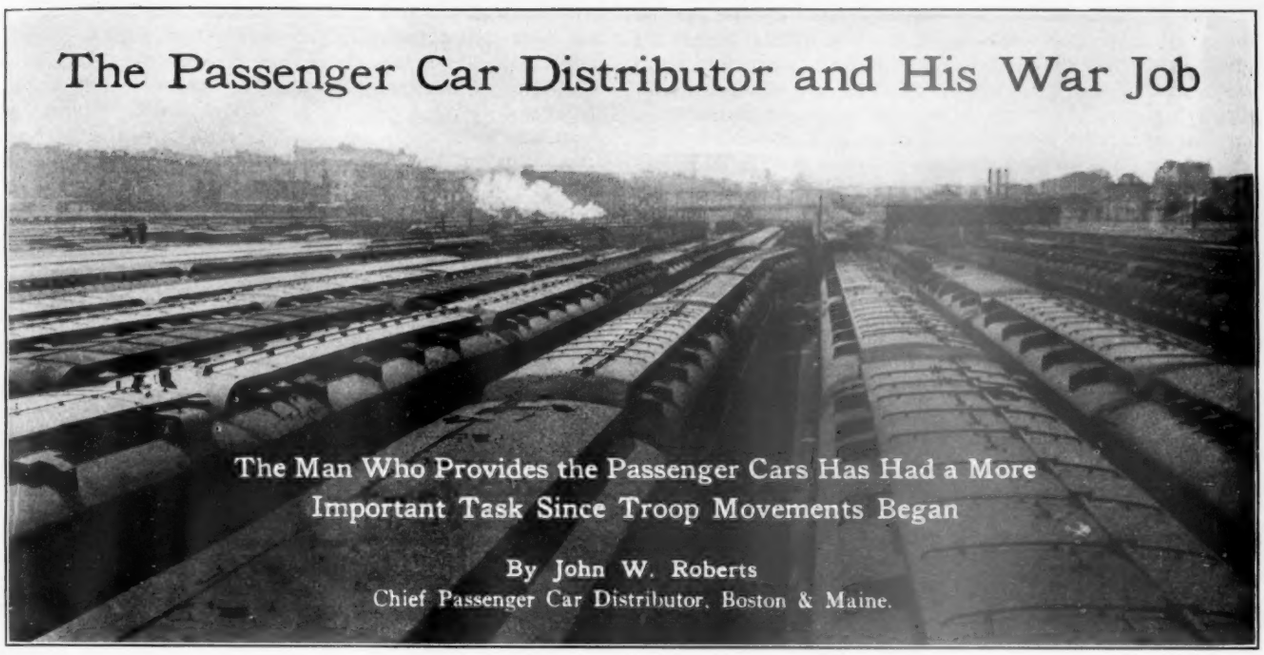

The Man Who Provides the Passenger Cars Has Had a More Important Task Since Troop Movements Began

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THIS NARRATIVE is meant to bring out some facts concerning an old type of provider known only to a few of his own craft and undoubtedly never thought of by millions of the traveling public—*the passenger car distributor.*

In peace times he has made possible the carrying out of the pleasurable desires of the vacationist; the business men go to their offices daily on his developed shrewdness; the babies of the land share his interpretation of Christian charity; Helen's letters owe their safe delivery to him; Race-track Phil, our well known theatrical stars, and, lately, to a greater degree than ever, Wall street, have felt his assistance to such an extent that they are all his debtors.

After war was declared by the United States, this individual—the passenger car distributor—became puzzled as to how he was to handle his soldier dependents and still take care of his regular business. Although not schooled in military tactics, the command—"We move——provide"—is like an order from the captain and his dealings with the United States government have developed in him such a respect for its compliance that it might well be said that his loyalty takes on the unquestionable aspect of the soldier and causes his patriotic concern to place him in the cast of the regular army man—that is, sacrificing his all for America's interpretation of democracy.

Every one remembers the call in the Mexican border crisis—nobody any better than the soldier in this story. He was on the job at 3 A. M. that memorable day, getting all available equipment together to move the largest number of men the longest distance on record. Later his heart throbbed when he heard that the big commander complimented his chiefs on the success of the undertaking, and only in his own humble way did he consider the part he played. Unlike the recognized soldier, he was not made a sergeant, lieutenant or captain for his work, but was allowed to stay on the job as a private and utilize the benefit of this experience as a guide on the next big movement—the one in which we are now engaged.

It is estimated that for the movement of one field army of 80,000 men, 6,229 cars made up into 366 trains are required. Consider, if you will, what this meant in cars for the national draft army of 687,000 men and 350,000 regulars recently moved to the various camps and cantonments, involving a haul anywhere from 25 to 3,500 continuous miles.

When it has been decided that our boys are to move somewhere, an order is given stating how many men, officers, horses and how much impedimenta are involved. The order is passed along through the various officers and as soon as possible placed in the hands of the passenger car distributor. He figures the actual requirements, basing them on the rules and regulations of the government with respect to over-night journeys or day runs, keeping in mind at the same time the restrictions placed by the roads over which the troops move, the electric third rail and tunnel clearances, the lighting, and the different requirements effective in various states.

Orders received may involve an assignment of from 10 to 250 extra cars at a time. The order is absolute and, with the severe shortage of all types of cars now being experienced by all roads, the difficulties of furnishing the wherewith to transport the boys on schedule are various, especially when the public, which has been kept entirely in ignorance of the move, must also receive the service to which it has always been accustomed. The public does get protected. The boys leave for "somewhere" on schedule. Little do they know, however, what arrangements have to be made to insure their safe departure. The passenger car distributor robs his regulars, gets in touch with his foreign allies (the roads via which the trains are to move), and in his own way obtains an appreciable amount of assistance at a very expensive empty haulage rate. He has the shop situation thoroughly canvassed and gets everything with wheels that is suitable to run and can be spared without closing down the big plant for want of equipment. Extra cars are brought from all points of the road, sometimes involving long hauls, and in a word every available car is sent to the originating point.

The cars are shifted into regular train units, turned over to another department for cleaning, oiling and general inspection, and await the arrival of the boys who are to use them to parts only known by their commanders and the various railroad officers, who arrange for their proper movement to destination.

In one of the first regiments to go to France was a young lieutenant who by profession was a very well known pas-

formed on many roads of using the trainmasters and engine foremen to "chaperon" private cars should be abolished. A trainmaster, as a rule, does not belong on passenger trains. There are too many freight crews to look after. As matters now stand, any unusual delay is taken up through correspondence by some office man, and the answers matched up and filed away for future reference.

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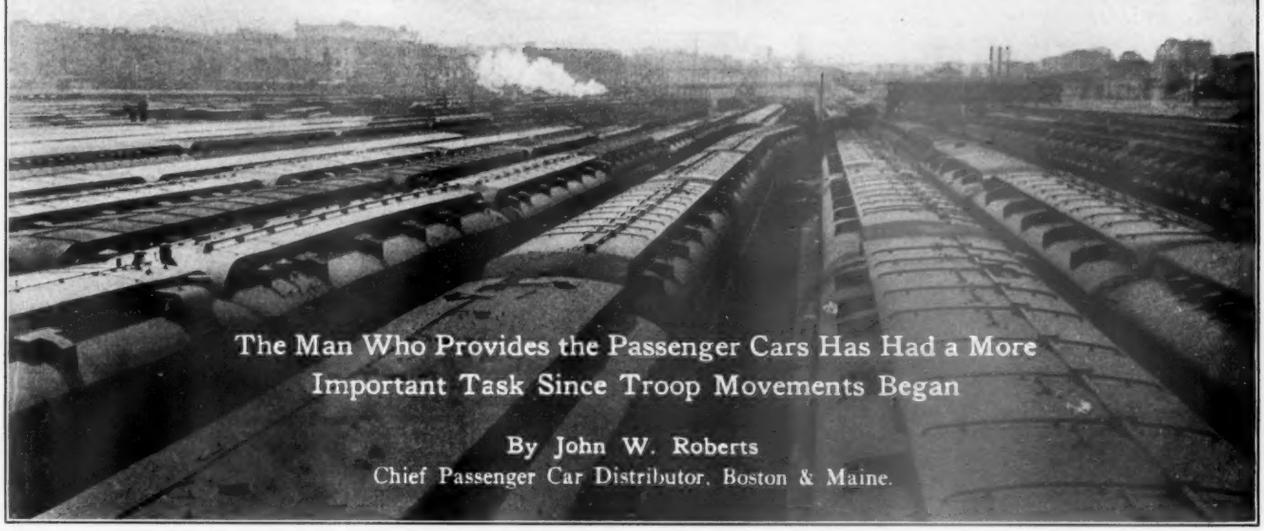

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In peace times he has made possible the carrying out of the pleasurable desires of the vacationist; the business men go to their offices daily on his developed shrewdness; the babies of the land share his interpretation of Christian charity; Helen's letters owe their safe delivery to him; Race-track Phil, our well known theatrical stars, and, lately, to a greater degree than ever, Wall street, have felt his assistance to such an extent that they are all his debtors.

After war was declared by the United States, this individual—the passenger car distributor—became puzzled as to how he was to handle his soldier dependents and still take care of his regular business. Although not schooled in military tactics, the command—"We move——provide"—is like an order from the captain and his dealings with the United States government have developed in him such a respect for its compliance that it might well be said that his loyalty takes on the unquestionable aspect of the soldier and causes his patriotic concern to place him in the cast of the regular army man—that is, sacrificing his all for America's interpretation of democracy.

Every one remembers the call in the Mexican border crisis—nobody any better than the soldier in this story. He was on the job at 3 A. M. that memorable day, getting all available equipment together to move the largest number of men the longest distance on record. Later his heart throbbed when he heard that the big commander complimented his chiefs on the success of the undertaking, and only in his own humble way did he consider the part he played. Unlike the recognized soldier, he was not made a sergeant, lieutenant or captain for his work, but was allowed to stay on the job as a private and utilize the benefit of this experience as a guide on the next big movement—the one in which we are now engaged.

It is estimated that for the movement of one field army of 80,000 men, 6,229 cars made up into 366 trains are required. Consider, if you will, what this meant in cars for the national draft army of 687,000 men and 350,000 regulars recently moved to the various camps and cantonments, involving a haul anywhere from 25 to 3,500 continuous miles.

When it has been decided that our boys are to move somewhere, an order is given stating how many men, officers, horses and how much impedimenta are involved. The order is passed along through the various officers and as soon as possible placed in the hands of the passenger car distributor. He figures the actual requirements, basing them on the rules and regulations of the government with respect to over-night journeys or day runs, keeping in mind at the same time the restrictions placed by the roads over which the troops move, the electric third rail and tunnel clearances, the lighting, and the different requirements effective in various states.

Orders received may involve an assignment of from 10 to 250 extra cars at a time. The order is absolute and, with the severe shortage of all types of cars now being experienced by all roads, the difficulties of furnishing the wherewith to transport the boys on schedule are various, especially when the public, which has been kept entirely in ignorance of the move, must also receive the service to which it has always been accustomed. The public does get protected. The boys leave for "somewhere" on schedule. Little do they know, however, what arrangements have to be made to insure their safe departure. The passenger car distributor robs his regulars, gets in touch with his foreign allies (the roads via which the trains are to move), and in his own way obtains an appreciable amount of assistance at a very expensive empty haulage rate. He has the shop situation thoroughly canvassed and gets everything with wheels that is suitable to run and can be spared without closing down the big plant for want of equipment. Extra cars are brought from all points of the road, sometimes involving long hauls, and in a word every available car is sent to the originating point.

The cars are shifted into regular train units, turned over to another department for cleaning, oiling and general inspection, and await the arrival of the boys who are to use them to parts only known by their commanders and the various railroad officers, who arrange for their proper movement to destination.

In one of the first regiments to go to France was a young lieutenant who by profession was a very well known pas-

senger car distributor on the line over which his regiment was to move. Ordinarily his business would require that he know all about such a movement, and you can bet he always did. Just before they left I had occasion to go to this camp with some of the equipment required for the movement, and in saying good-bye to my friend was surprised to find that he had an inference that he was going to a training field in one of our states instead of to a well known port of embarkation. This to me was rather pitiful. Here was an officer, only out of his regular line of endeavor a short while, and not in possession of that knowledge, which now would be of interest to himself, and which he always had had for the interest of others.

It is no uncommon sight for the commuter to glance up from his morning paper and see from the car window a number of foreign ownership cars that have an unfamiliar look. Sometimes the cars get a great distance from home. In his wonderment Mr. Commuter asks himself if the owning road has lost this equipment. The answer is, yes, but only temporarily. In a short while after the troops have left the originating point, the passenger car distributor, still in the game, has his orders for the return of the cars, taxing the Western Union and the energy of the mail man, requesting the various lines involved in the movement (sometimes eight or ten), to effect the prompt return via service route. This means that each line in some instances has received the order in advance of the arrival of the cars, and when the request is received it is then only a matter of getting the power lined up to start and keeping the cars moving on their homeward journey for another big assignment. This return movement is not accomplished on the mere presentation of a request, and must be followed much closer and with greater difficulty than the service movement.

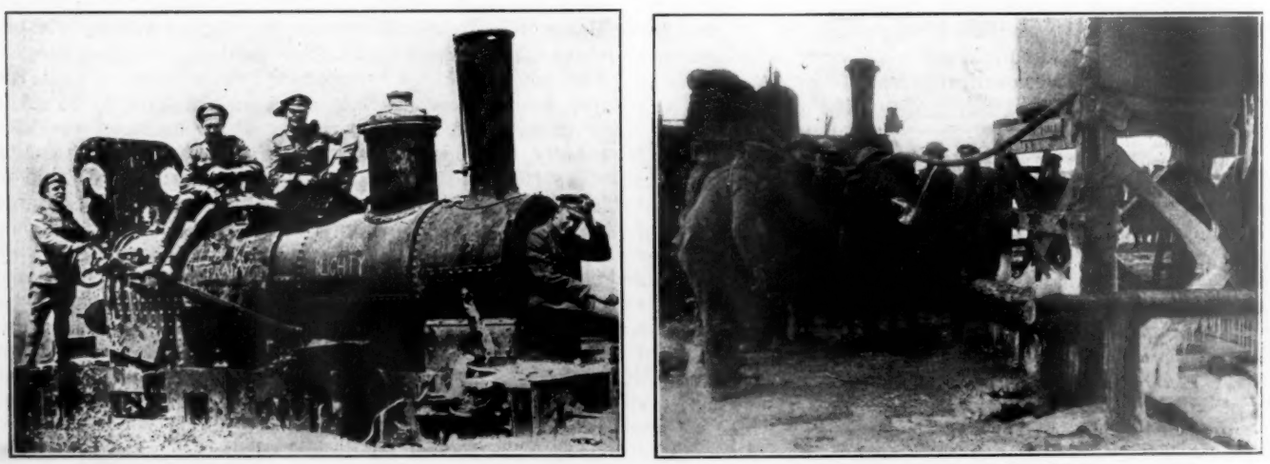
When it has been decreed by Him that the North Pole has some samples of whistling winds, treacherous but beautiful icicles, new brands of granulated snow described by the poets, which are not required at all periods of the year in that region, they are sent us. The passenger car distributor then experiences an aggravated amount of trouble—freezing up of steam pipes, causing bursting and requiring shopping of cars affected, thereby reducing his maximum supply of equipment materially. He is not daunted, however, by that word trouble, as certainly every one in the railroad business has his troubles, and so he overlooks them, and he won't admit that he has any more than the other fellow, although in his heart he thinks he has.

The omission of this feeling could be carried on successfully from day to day if it were not for the mass which he has been trying faithfully to serve—the public—who as individuals are better classed as conservatives, but when considered in the public category are prone to reflect their criticismal traits across the horizon of public service corporations, principally because of misinformation or more often through lack of information which may not be available in some cases on account of strict government orders.

The writer is one of the public himself. He knows full well how the feelings of the public are sometimes aroused through the action of some of the corporations to which our people have to look for assistance. In short, he sometimes cannot but agree that the complaint rendered is just, and that corrective action is necessary if the good will of the public is to be retained. But in the role of the conservative he often sees the unjust and irresponsible citizen, in these times especially when sacrifices are asked to be made, displaying a conceitful attitude.

In a large railroad terminal, or in many of these terminals these days, congestion is a familiar sight at certain periods of the day. The congestion is caused possibly by slow backing of trains into the station. Perhaps, however, some of the trains are cut, a car having been taken from their normal make-up because four or five thousand soldiers are being transported over the system that day, and the management finds it necessary to inconvenience its regular patrons a small amount in order to carry out the obligation placed upon it by the government. We are transporting our brothers, our protectors, who are on their way to fight for us—for the public—but this same public does not want to put up with even this small sacrifice, and when discommoded to this small extent actually heaps voluminous abuse upon the railway which is trying to carry out orders from Washington, and at the same time take care of thousands of commuters with the least possible inconvenience.

The passenger car distributor does not mind this abuse—he is accustomed to hearing it—but at the same time he classifies the citizens who make it with those of the unthinking and unpatriotic class. The intensity of their unfairness is somewhat modified, however, to his mind, because they do not know that the drain of the normal resources is being made for their own benefit—a fact which emphasizes to him how well the government desires to keep the secrecy of such important matter are being adhered to.



Central News Photo Service

The Railroad Helps the Tommies Enjoy Themselves Off Duty. On the Left, a Light Railway Locomotive Captured from the Germans. On the Right, Getting Water Supply from a Railroad Tank

Increases in Rates in New England Allowed

Financial Condition Reviewed. Higher Rates and Fares Authorized. Mileage Abuse Criticized

THE INTERSTATE COMMERCE COMMISSION on April 27 rendered its decision in the New England rate case, allowing certain increases in class freight rates and establishing local and joint one-way passenger fares based on a rate of 2¾ cents per mile on New England lines or portions thereof where the one-way fares are now on a lower basis. The order also provides for the sale of mileage tickets at the same rate per mile as one-way tickets or, in the carrier's discretion, on a basis of one-tenth of a cent or one-eighth of a cent per mile below the regular one-way fares. It also provides for the withdrawal from sale of open and unlimited trip tickets, for the sale and use of 25-trip family tickets limited to three months from date of sale on a basis of 2¼ cents per mile in instances where the continuance or establishment of such tickets is proposed in the pending applications, establishes party fares on a basis of 2½ cents per mile, and provides for increased zone fares on the Providence, Warren & Bristol branch of the New York, New Haven & Hartford. Proposed increased class freight rates by the Bangor & Aroostook and the Canadian Pacific are held not to have been justified. The report, by Commissioner Anderson, includes an interesting analysis of the financial condition on the New England railroads.

The proceeding grows out of the filing by all of the New England roads of applications under the amended fifteenth section asking permission to file numerous and substantial increases in passenger fares and class freight rates. Members of each of the public service commissions of the six New England states and of the Second District of the state of New York sat with the representatives of the federal commission in order that the whole rate situation might, if practicable, be dealt with promptly and in order that all the officials charged with public responsibility in transportation regulation might have the benefit of a joint hearing. Most lines of industry in New England were also represented at the hearings. The report points out at the outset the distinctive nature of the New England transportation problem, growing out of the facts that the New England lines serve directly almost none of the territory outside of New England, and that the traffic of the New England roads is poorly balanced because of the excess of raw materials moving into New England over the amount of manufactured products moving westward. Probably there is nowwhere in the country, the report says, a substantially equivalent population living upon a comparable area so dependent upon transportation as the New England community. Yet this community "has allowed its chief railroads to be wrecked by mismanagement equalled in but few instances reflected in our reports. It would be difficult to exaggerate the handicap with which New England is now suffering from this mismanagement."

Condition of New England Roads

Like other carriers in eastern territory, the report says, the New England roads have recently found their operating expenses increasing more rapidly than their operating revenues. The applications were filed primarily to obtain as speedily as practicable additional revenue to offset present and prospective cost increases. Most of the interests represented at the hearing not only admitted the carriers' need of additional revenue and that it should be provided at the earliest possible date, but expressed their willingness to pay during war times any additional rates which the commission might find reasonable and proper, with the qualification, however, that the rates proposed by the carriers were not thought to be scientifically constructed and were not considered as constituting a proper or satisfactory basis for a permanent rate structure. Some objection was also offered to any increases in rates unless accompanied by an improvement in the service. Shippers recognized, however, the report says, the dependence of the community upon efficient transportation service and that that service must be paid for. Therefore, the issues presented have been approached as a problem of general importance and private individuals and concerns have largely subordinated their interests to those of the general public.

In the report in the Fifteen Per Cent Case, the commission observed that "Among eastern carriers those located in New England appear to present the most serious condition." That the cost of operation on New England roads has increased sharply during the last year is not open to question. For seven typical New England carriers increases in wages in 1917 actually granted prior to the hearing in the latter part of November and the first part of December amounted to about $8,950,000 annually, and other demands were pending. The increased annual cost of fuel for the seven roads was estimated at $12,456,000, based on the September prices. In spite of a decided increase in traffic during the last few years the financial condition of the New England roads as a whole has been less favorable as far as net income is concerned, except for the year 1916, than it was during the period prior to 1913. The net income for the seven roads decreased during 1917 by $11,429,000, while the gross operating revenues increased by substantially the same amount. High interest and renewal charges on short term notes were among the potent causes of unsatisfactory net results. The monthly report of eight New England railroads show for the calendar year 1917 a gross railway operating revenue of $200,593,559, an increase of $12,555,779 over 1916, but the operating expenses were $150,369,991, an increase of $23,860,891. The railway operating income shows a decrease of $12,028,817.

New Haven

The report then takes up the revenue needs of the individual railroads. Regarding the New Haven it is stated that it is impossible to deal with or even superficially consider its income needs and rights without becoming involved in the labyrinthine maze of its financial past. "In a word," the report says, "both the present corporate structure and the financial history of this so-called railroad shows that it now is and for some time has been everything that a railroad should not be. With one of the finest opportunities in the world for successful railroading, with a property which for years prior to 1903 had been managed conservatively and steadily if not very progressively, its present status is such that neither its present management nor the regulating commissions under whose jurisdiction it falls can do anything more than make the roughest kind of guess as to their proper course of procedure. Its condition is the result of a decade of attempting to run a great railroad property regardless of either ethics or mathematics." It is stated that any present finding on rates must be understood to be subject to thorough revision if and when the controlling facts become ascertainable.

After discussing conflicting evidence on the subject, the report says that the percentage earned on investment in prop-

erty used or usable for "possibly legitimate railroad purposes" by the New Haven as nearly as can now be computed was 5.48 and 6.04 for the fiscal years 1915 and 1916, respectively, 5.98 for the calendar year 1916 and 5.23 for the calendar year 1917 (estimated in part). It follows that the New Haven as a railroad has been making fair earnings, the report says, but its investment in additional railway facilities for the last twelve years has not shown a proportionate increase in traffic units. The gist of the New Haven's troubles is said to be in its so-called "other investments," the amount of which, the commission finds it impossible to state, but making allowance for variations and uncertainties, it is stated that the New Haven as an investment enterprise has now about $200,000,000 invested in outside properties yielding a return of less than 2 per cent, a large part of which therefore must be charged off as loss.

Regarding the attitude which the commission should take toward this situation, the report says in part:

"We do not overlook that under our present form of corporate management the great majority of the stockholders in the New Haven enterprise were even more the victims of the mismanaging directors than were the patrons of the road. It is common knowledge that the directors of these great corporations are in fact selected by banking or other interests in too many instances actuated by motives essentially adverse to the interest of the stockholders toward whom they bear a fiduciary relation. But as long as our public policy is represented by the law as it now is, this commission must, so far as rate making is concerned, hold stockholders responsible for the mismanagement of directors who, in contemplation of law, are selected by them. Until this commission, or some other governmental body with adequate power, permanently controls the issue of carrier securities and, within reasonable limitations, the application of the proceeds thereof, stockholders and other investors in carrier securities are certain from time to time to be subjected to such perils of mismanagement and resultant losses as have accrued to the stockholders of the New Haven, the Rock Island, the Pere Marquette, the Cincinnati, Hamilton & Dayton, and others. We say this with reference to future conditions, not overlooking the adequate, but temporary, safeguards now obtaining under federal control.

"After a railroad corporation like the New Haven and some of our other well-located and prosperous railroads has had a long career of business success and reasonably safe management, its stock becomes widely distributed among investors who pay little or no attention to guarding their investments. But this situation, fraught with grave danger to the investing public, is one with which the Congress must deal. As the law now is, this commission is powerless to afford any real remedy for past misdoings or in the future to protect other similar bodies of stockholders from depredations and losses of an analogous kind. We can do no more than investigate and condemn after the evil has been accomplished, and make a "report" of losses and sufferings which we were powerless under the law to prevent. Private capital invested in carrier companies can not be generally safe under such lack of security regulation as has existed prior to federal control.

"This commission has frequently in its annual reports to Congress urged the necessity of remedial legislation along the lines indicated above. But the absolute necessity of such legislation, if the nation is on return of peace to continue to rely upon private capital for the extension and development of its transportation system, takes on new pith and point when considered in connection with a concrete situation such as that presented by the New Haven, the Rock Island, and other fraudulent or wasteful exploitations above referred to. The regulating commission is presented with a problem impossible of sound and satisfactory solution. On the one hand we have the claimed necessity of approving such rates as will under private control establish credit and invite new capital for the public service. On the other hand we have a history of waste and wrecking, demonstrating that lower rates might have been adequate had the carrier corporation managed its business with some fair regard to law and sound principles. After the evil has been done, the money wasted, the stockholders victimized, then there follows, as in the present case, the stern necessity of some measure to provide needed transportation facilities. The regulating commission is then urged to 'adopt a constructive policy,' 'not to dwell upon past errors,' etc. Interpreting these euphemistic phrases, the real demand is that the regulating commission shall, through the medium of excessive rates, take money from the rate payers to make up the losses which the carrier corporation's directors have caused by their lawless or unfaithful administration.

"The fate of the New Haven stockholders is a hard one. But we have no alternative except to hold them chiefly responsible for losses which, in contemplation of law, they brought upon themselves through their chosen directors. There is no exact mathematical basis for determining a just and reasonable return. We limit our present conclusion to finding that under all the circumstances of the New Haven case a reasonable return upon the carrier property investment shown upon its books may be justified."

It follows, the report says, that the New Haven railroad is entitled to such rates as will keep its return on its carrier property at least up to the standard of the past three years, but after taking into consideration the rapidly increasing costs and the railroad's estimates of the increased revenues to be expected from the rate increases asked, doubt is expressed as to whether the revenues from the proposed rates will exceed or even equal the increased expenses.

Boston & Maine

Regarding the Boston & Maine, it is stated that none of the parties to the record questions and the facts demonstrate the need of additional revenue, but its right to such increases requires more careful consideration. The road had deficits in 1913 and 1914, and it is estimated that final returns will likely show a deficit for the year 1917 of more than $400,000. The financial organization of the system, the report says, has for many years been intrinsically unsound. Even before it came under New Haven control its management was never conservative of the rights of its investors nor progressive in furnishing facilities and service to its patrons. The report also refers to reckless and destructive financing under New Haven control, but declares that the stockholders have already been heavily penalized for the mismanagement and that therefore it cannot be said that the system is not now entitled to rates adequate to pay a reasonable return upon its investment in carrier property. There is nothing in the record to indicate the possibility of such economies in management and operating expenses as to provide such return. The only relief seems to be a substantial increase in rates.

A speedy consolidation of the lessee company with its chief leased lines, it is declared, would greatly simplify and strengthen the financial structure and make possible substantial economies, particularly in connection with the Boston terminals. Such reorganization is plainly demanded in the interest of both the public and the security holders.

Maine Central

As to the Maine Central, the report shows that the increased expenses in 1917 were expected to amount to $2,720,633, whereas the proposed increases in revenue from the proposed increases in rates were estimated at $1,670,000. Therefore, the additional revenue expected is more than a million dollars less than the estimated additional costs, and

there is no present indication that the carrier may reasonably expect a decided increase in tonnage during the year 1918.

Boston & Albany

As to the Boston & Albany, it is estimated that the increased freight rates proposed will add $200,000 annually to the revenues and that the additional revenue from increased passenger fares will amount to approximately $600,000. The increase, the report says, seems plainly demanded in the public interest.

In discussing the reasonableness of the proposed passenger fares and the changes in mileage book and trip tickets, the commission says in part:

Reasonableness of Proposed Passenger Fares

"Since the report in *The New England Investigation* was published the New England roads, following the recommendations of a joint conference of representatives of the several state railroad commissions of New England, and a member of the Interstate Commerce Commission, have revised their passenger fares upward and at the present time the basis for one-way fares in southern New England is 2½ cents a mile (except in the Boston suburban zone, where it is 2 cents a mile) and for mileage tickets 2¼ cents a mile. It is proposed by the roads operating in southern New England to increase the basis uniformly to 2¾ cents a mile for one-way fares and to 2½ cents a mile for mileage books. It is also proposed to increase the rate for party fares from a maximum of 2¼ cents to a maximum of 2½ cents a mile. It appears that in trunk line territory and central freight association territory generally the present basis for interstate one-way fares is 2½ cents a mile and for mileage tickets 2¼ cents a mile. In *Western Passenger Fares,* 37 I. C. C., 1, after an exhaustive investigation involving interstate passenger fares in a number of midwestern states, we found as reasonable in the state of Illinois; Wisconsin; Michigan, upper peninsula; Minnesota; Iowa; Nebraska; Missouri, north of the Missouri River; and in Kansas on and north of the main line of the Union Pacific Railroad from Kansas City to the Colorado state line, a basis of 2.4 cents per mile for one-way fares and a basis of 2.25 cents per mile for 1,000-mile tickets; and in the state of Missouri, south of the Missouri river, and in the state of Kansas, south of the main line of the Union Pacific Railroad, a basis of 2.6 cents per mile for one-way fares and 2.5 cents per mile for 1,000-mile tickets. At page 33 of the report in *Western Passenger Fares,* appears the following table:

General Statistics

	Territory			
	New England	Trunk line	Central	Western
1. Average population per square mile.	105.7	136.7	89.8	24.9
2. Average population per mile of road	827.0	750.0	444.0	244.0
3. Average passenger-train revenue per mile of road	$8,913	$7,676	$4,110	$2,961
4. Average number of passengers carried 1 mile per mile of road	431,387	357,779	169,743	124,069
5. Average distance in miles each passenger was carried	19.45	25.45	39.65	44.39
6. Average receipts per passenger per mile	$0.01777	$0.01755	$0.01917	$0.01912
7. Average receipts per passenger-train mile	$1.71160	$1.46420	$1.32070	$1.33303

"The conclusion to be drawn from these data is that normally the passenger fares in New England should not be on a higher basis than in the other parts of the country referred to in the foregoing table, but that the proposed fares may be approved as an emergency or war measure.

"There is probably no part of the country where the sale of mileage books on a substantially lower basis per mile than regular one-way fares has resulted in such flagrant abuses, such unjust discriminations, and such impairment of railroad revenues as in New England.

"It is customary in the greater part of New England to sell 500-mile books, good to bearer, and good until used, at a rate of 2¼ cents a mile. In southern New England the regular one-way fare is over 11 per cent higher than the mileage fare, and in northern New England the regular fare, in many instances, on a 3-cent basis, is 33 1/3 per cent higher than the mileage fare. The result is that ticket "scalpers" thrive in all parts of New England; and they and others make a business of dealing in mileage books which are displayed like ordinary merchandise in the store windows, at reduced prices. Certain individuals engaged in this traffic have constantly on hand as many as 200 mileage books, and it is estimated that their profits amount in single instances to as much as $3,600 annually.

"The fundamental evil in the sale of mileage books, at least in New England, is that they accord preferential fares to those who use them. In northern New England, for example, a man with sufficient capital to buy a mileage book, may ride 100 miles for $2.25. A less fortunate individual riding between the same points in the same train and on the same car, must pay $3 for the same service. Witness after witness testifying for the carriers, when asked upon what theory such discrimination could be justified, replied that it could not be justified on any principle. It is clear that the mileage book evil in New England must be eliminated, either by canceling the mileage fares entirely or by increasing them more nearly to the basis of regular one-way tickets. If travelers want mileage tickets as a convenience and not as a discrimination, there is no great objection to permitting their sale.

"Most of the objectionable features of mileage books are found also in certain forms of trip tickets. These are sold in New England usually in strips of from 5 to 50 tickets, good to bearer and until used. The rate ranges from 1 cent to 2 cents per mile, resulting in many instances in passenger fares less than one-half the regular one-way fare. The extent of the discrimination in favor of purchasers of these tickets is even greater, therefore, than in the case of mileage books. This form of ticket is used quite generally in southern New England, but more particularly to and from the city of Boston within a 15-mile zone. Such tickets are used not only for travel wholly within the zone but also for the purpose of breaking down the through fares between the city of Boston and points beyond the suburban zone. It is proposed to increase by 25 per cent the charge for trip tickets within the Boston suburban zone. The New Haven proposes to withdraw from sale trip tickets on other parts of its line and similar proposals are made by the Boston & Albany.

The general passenger agent of the Boston & Maine testified that the 12-trip tickets, which are said to be sold in no other part of the country, result in greater abuse than any other form of ticket. The misuse of these tickets not only results in according preferential fares to certain persons but it seriously impairs the carriers' revenues. There is little, if any, evidence of record in justification of the continuance of these tickets, and considerable evidence in support of their withdrawal. While these trip tickets in the Boston zone are recognized by an act of the Massachusetts legislature, the Massachusetts Public Service Commission now seems to have full rate-making power.

In principle there is no easy justification for the continuance of trip tickets within the Boston zone only. Such tickets are not sold between New England points and New York City. The usual 60-trip monthly commutation tickets and 25-ride family tickets, to be later discussed, would seem to meet most of the legitimate demands of the Boston commuters for special fares. At any rate, some method should be devised to prevent such misuse as we have just described.

The general withdrawal of open and unlimited trip tickets with respect to interstate transportation and their continuance for intrastate travel within the Boston zone on the low basis proposed is of qupestionable propriety. The proposal

to eliminate such tickets with respect to interstate travel is approved.

Freight Rates

Regarding the reasonableness of the proposed increased class rates, the report says that one cannot study the structure of class freight rates in New England without being impressed with the fact that the rates as a whole are relatively low and that there is no reason as far as it is advised why the rates in Southern New England should be lower than in Central Freight Association territory, but that as a matter of fact they are substantially lower. The railroads had proposed two mileage scales of class rates, one to apply to the division of New England roads known as class A and the other to class B roads. The commission makes some modification in the division of roads between classes A and B and finds that a logical and proper rate structure will result if the rates now in effect in Central Freight Association territory, zone B, are applied to class A lines in Southern New England. The rates for class B lines, it finds, should not be more than 10 per cent higher than those for class A lines, and the rates for any haul embracing both a class A line and a class B line should be made on the class B basis. The report also says that the prevailing impression that less-than-carload traffic is not generally remunerative is supported by the evidence in this and other cases. Investigation of the profitableness of less-than-carload traffic made under the direction of a committee of eastern railroads including the New Haven, tends also to the conclusion that this traffic is not remunerative. These considerations suggest the propriety of establishing in New Englaid a rate structure that will have the effect of imposing on the merchandise traffic a greater portion of the transportation burden than it has hitherto borne, and the commission finds that this result would be effected by establishing for class A lines in New England the zone B rates in effect in Central Freight Association territory.

After discussing the proposals of the Bangor & Aroostook Railroad, the commission finds that the evidence submitted by this carrier in support of the proposed increasced class rates does not establish their reasonableness. It is suggested that the Bangor & Aroostook undertake a thorough revision of its tariffs, particularly its commodity tariffs, with a view to making such moderate increases as may be needed to offset its increasing costs, but primarily for the purpose of reconstructing its rates on a logical and equitable basis, so that their propriety can then be determined upon an adequate record.

Relative Results of Freight and Passenger Operation

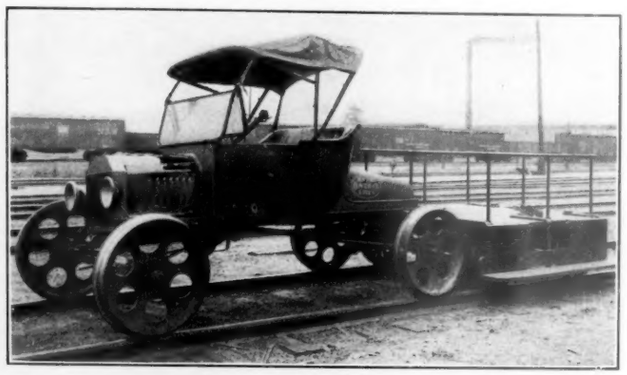
A careful study was made by one of the commission's expert accountants of the relative cost of freight and passenger operation on the Boston & Maine, the Boston & Albany, and the New Haven for the first nine months of 1917 as compared with the years ended June 30 and December 31, 1916. The Boston & Maine figures for 1917 cover only the first six months of the calendar year. An examination indicates that on the Boston & Albany and on the New Haven the passenger service is more profitable than the freight service, and that on the Boston & Maine the two classes of service appear to produce about the same relative result. An allocation of revenues and expenses as between the passenger and freight service shows that with respect to the Boston & Albany and the New Haven the operating ratio for the passenger service increased much less rapidly in 1917 than the operating ratio for the freight service. Among other interesting statistics shown it will be noted that the wages of freight enginemen and trainmen absorbed in 1917 a slightly greater proportion of the freight service revenue than in 1916, while the wages of passenger enginemen and trainmen absorbed in 1917 a somewhat smaller proportion of the passenger service revenue than in 1916 and that out of every dollar of passenger service revenue in 1917 the Boston & Maine and the Boston & Albany spent 14.56 cents and 14.06 cents, respectively, for fuel for passenger locomotives, as compared with 8.62 cents and 8.96 cents for the calendar year 1916. The relatively satisfactory showing of the passenger service as compared with the freight service is due principally to the fact that in 1917 the daily average mileage of passenger trains and locomotives decreased, while contemporaneously there was an increase in the number of passengers per car-mile and per train-mile and also an increase in the passenger service revenue.

Other Possible Sources of Revenue

It was stated by the officials of certain of the New England lines that a proposal was in process of development to establish a charge for checking baggage and also to assess an extra charge in addition to the regular or normal ticket fare against passengers occupying sleeping and parlor cars because of the alleged additional cost of passenger transportation in Pullman cars over that in ordinary day coaches. In addition to this, the opinion was expressed by several traffic and other officials that (*a*) the minimum charges for less-than-carload shipments of freight should be increased from 25 cents to 50 cents (*b*) that many of the exceptions to the official classification involving rates, rules, minimum weights, etc., should be canceled; (*c*) that special less-than-carload commodity rates should as far as possible be eliminated and (*d*) that certain carload commodity rates, notably those applicable to lumber and pulp wood, should be increased. The report says that if unduly low or unremunerative rates have in the past been established to meet conditions that obtained at the time of their inception, and if conditions have now changed so that there is no justification for maintaining such rates, they ought to be increased to a basis where they will be remunerative.

Another Use for a Ford

THE MICHIGAN CENTRAL has developed a new use for a Ford automobile, using it in the manner shown in the photograph to haul men back to the hump at its West Detroit classification yard. The car is fitted with flanged



A Ford Car in Hump Yard Service

wheels and draws a trailer which will carry from 15 to 20 men at a time, or practically the entire crew of riders on the hump.

LOCOMOTIVE PRICES IN ENGLAND.—The Taff Vale Railway of England has recently given orders for some new locomotives which, the chairman of the railway company says, will cost £7,000 ($35,000) each instead of the pre-war price of £2,300 ($11,500) each.

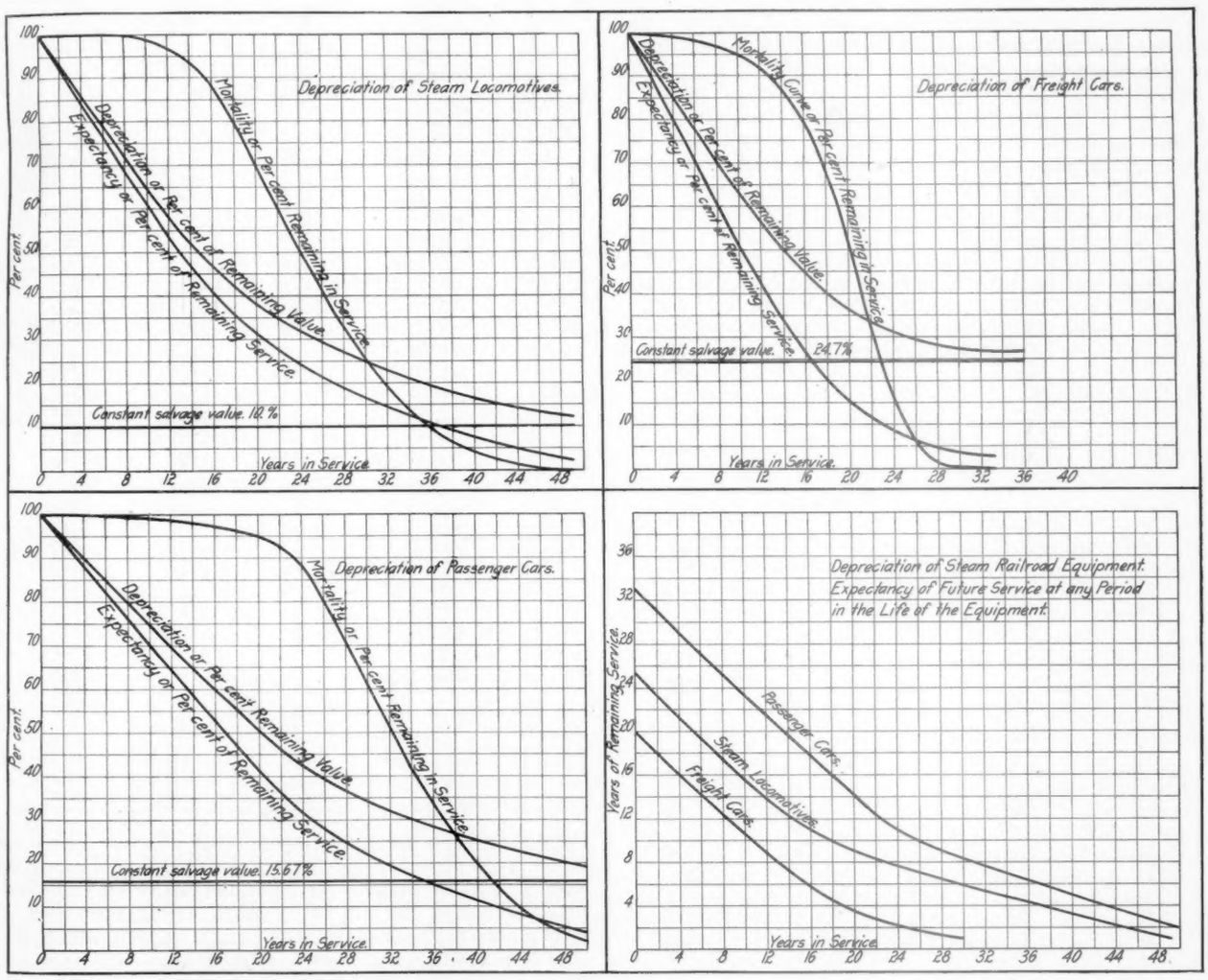
The Actuary Theory of Depreciation of Physical Property Values*

By E. J. Kates

ONE OF THE MOST DIFFICULT questions confronting valuation engineers, accountants and economists of the present day is that regarding depreciation of the values of physical property. With the Government appraisal of railroad properties well under way, various conflicting theories now being advocated should be crystallized into some one rational and workable basis.

Before a determination of the proper method of arriving at the amount of existing depreciation can be reached, it is necessary to decide what elements or factors shall be given consideration. Depreciation has been described as representing a wastage of serviceable life. Present value has been described by some as representing the proportion of service remaining in the property and by others as representing the present physical condition of the property, considering the state of repairs and its adaptability to meet current requirements. The first gives but little consideration to the actual condition of the article so far as its need of repairs is concerned since an article, such as a locomotive, may reasonably be expected to have as great an expectancy of future serviceable life just before it goes into a shop as it will have just after it comes out of the shop with the needed repairs made. The second plan reverses the proposition and gives but little consideration to the expectancy of future service, but rather attempts to measure the deferred maintenance or cost of repairs necessary to put the article into a 100 per cent operating efficiency. Here the locomotive after coming from the shop with a general overhauling, would be rated close to 100 per cent, while the one just ready for general repairs would be given a much lower rating.

Just what attitude the courts will eventually take in regard to this matter, is not as yet clear, though there are considerable grounds for the belief that the final interpretation of the meaning of the terms "realized depreciation" as a deduction to be made from the value new of physical property will be the first of the two definitions given above or in other words, a measure of the used service compared with the remaining service in the article. If this method be adopted, then some rational basis for the determination of the relation of future expected service to total expected service must be found.


Depreciation of Steam Locomotives.
Mortality or Per cent Remaining in Service.
Depreciation or Per cent of Remaining Value.
Expectancy or Per cent of Remaining Service.
Constant salvage value. 19.7%
Per cent.
Years in Service.
Depreciation of Freight Cars.
Mortality Curve or Per cent Remaining in Service.
Depreciation or Per cent of Remaining Value.
Expectancy or Per cent of Remaining Service.
Constant salvage value. 24.7%
Depreciation of Passenger Cars.
Mortality or Per cent Remaining in Service.
Depreciation or Per cent Remaining Value.
Expectancy or Per cent of Remaining Service.
Constant salvage value. 15.67%
Depreciation of Steam Railroad Equipment.
Expectancy of Future Service at any Period in the Life of the Equipment.
Years of Remaining Service.
Passenger Cars.
Steam Locomotives.
Freight Cars.

Various methods have been advocated such as the "Straight line theory," the "Sinking fund theory" and the "Average age of dollar invested theory" but to all of these there are serious objections. In the first place they depend upon a fixing of an average life for each class of property which is used as a measure with which each individual or group of individual articles are compared. Averages are not applicable to individual cases without a considerable element of error being considered. Neither are averages applicable to individual cases where the realized life has exceeded the expected aver-

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age. To overcome this feature it is quite commonly the practice to use a minimum service value, past which depreciation is not figured, but this in itself violates the basic principle of averages.

To overcome the objections to the various methods heretofore used, the writer has devised what has come to be known as the "Actuary theory." This name is due to the fact that the same principles are used here as are used by the actuary in computing the risks of an insurance company. The fact that these principles have stood the test of time in the modern business world, is surely one point in their favor, when applied to the question of depreciation of physical property values.

In the development of the mortality and expectancy tables and curves for railroad equipment, the writer has been fortunate in having access through the various commissions and by reason of his connection with a number of the larger rate cases during the past nine years, to the records of practically all the railroads west of Chicago. The data are a composite from these various roads and covers an extended period of time. For illustration three tables and four charts are shown herewith, giving the general average data for each of the three general classes of railroad equipment.

TABLE 1

THE KATES DEPRECIATION STUDIES FOR LOCOMOTIVES

Years in service	Per cent remaining in service	Expectancy in years of service	Expectancy in per cent of remaining service	Expectancy in per cent of remaining value
0	100	25.4	100	100
1	100	24.4	96.1	96.5
2	100	23.4	92.1	92.9
3	100	22.4	88.2	89.4
4	100	21.4	84.3	85.6
5	100	20.4	80.3	82.3
6	100	19.4	76.4	78.8
7	100	18.4	72.5	75.3
8	100	17.4	68.5	71.6
9	99.5	16.5	64.7	68.2
10	99	15.6	60.9	64.8
11	98	14.7	57.2	61.5
12	97	13.8	53.5	58.2
13	95.5	13.0	50.0	55.0
14	94	12.2	46.6	51.9
15	91	11.6	43.6	49.2
16	88	11.0	40.8	46.7
17	84	10.4	38.0	44.2
18	80	9.9	35.5	42.0
19	75	9.5	33.3	40.0
20	70	9.1	31.3	38.2
21	64.5	8.8	29.5	36.6
22	60.0	8.4	27.6	34.8
23	54.8	8.1	26.1	33.5
24	50.5	7.7	24.3	31.9
25	46.0	7.4	22.9	30.6
26	41.2	7.1	21.4	29.3
27	37.0	6.8	20.1	28.1
28	33	6.5	18.8	26.9
29	29.2	6.2	17.6	25.8
30	25.7	5.9	16.4	24.8
31	22.5	5.6	15.3	23.8
32	19.2	5.4	14.4	23.0
33	16.5	5.1	13.4	22.0
34	13.9	4.9	12.6	21.3
35	11.8	4.6	11.6	20.4
36	9.6	4.4	10.9	19.8
37	8.0	4.1	10.0	19.0
38	6.5	3.8	9.1	18.2
39	5	3.6	8.5	17.7
40	4	3.3	7.6	16.8
41	3.0	3.0	6.8	16.1
42	2.2	2.8	6.2	15.6
43	1.6	2.5	5.5	15.0
44	1.0	2.3	5.0	14.5
45	.7	2.0	4.3	13.9
46	.4	1.7	3.6	13.2
47	.1	1.5	3.1	12.8
48	.08	1.3	2.6	12.3
49	.02	1.0	2.0	11.8

It is not contended that these ratios will exactly fit conditions on each and every road, nor is it contended that they will exactly fit conditions on any road under the present war time methods of operations. Indeed the writer prefers whenever possible to make an individual study of the conditions on each road involved, with a derivation of tables and curves more especially adapted to any peculiar conditions thereon. However, it may be said that in general the data shown herewith are applicable without any considerable change to nearly any western road operating under the conditions existing prior to the present war. Again, the data for freight cars come more nearly meeting actual conditions when divided into the various groups or classes of equipment such as coal, flat, box, stock and refrigerator cars.

In all three charts the curve designated "Mortality curve" is derived from the actual history of thousands of items of equipment and represents the per cent remaining in service at the end of each year or inversely the per cent taken out of service during any year after the date of building. This curve is exactly analogous to the actuaries' mortality curve.

TABLE 2

THE KATES DEPRECIATION STUDIES FOR PASSENGER CARS

Years in service	Per cent remaining in service	Expectancy in years of service	Expectancy in per cent of remaining service	Expectancy in per cent of remaining value
0	100	33.16	100	100
1	100	32.16	97	97.5
2	100	31.16	94	95.0
3	100	30.16	91	92.4
4	100	29.16	88	89.9
5	100	28.16	85	87.4
6	100	27.16	82	84.9
7	99.7	26.2	79	82.3
8	99.5	25.3	76	79.8
9	99.2	24.4	73	77.3
10	99.0	23.4	70	74.7
11	98.7	22.5	67.2	72.4
12	98.5	21.5	64.2	69.8
13	98.2	20.6	61.3	67.4
14	98.0	19.6	58.3	64.9
15	97.5	18.7	55.5	62.5
16	97.0	17.8	52.7	60.1
17	96.5	16.9	49.9	57.8
18	96.0	16.0	47.1	55.4
19	95.5	15.1	44.3	53.1
20	95.0	14.3	41.7	50.9
21	93.7	13.3	38.8	48.4
22	92.5	12.5	36.2	46.2
23	90.2	11.7	33.7	44.1
24	88.0	11.0	31.4	42.2
25	84.0	10.5	29.6	40.7
26	80.0	10.0	27.8	39.1
27	75.5	9.5	26.0	37.6
28	71.0	9.1	24.6	36.4
29	65.7	8.7	23.1	35.2
30	60.5	8.4	21.9	34.2
31	55.7	8.0	20.5	33.0
32	51.0	7.6	19.2	31.9
33	46.2	7.3	18.1	31.0
34	41.5	7.0	17.0	30.0
35	37.7	6.6	15.9	29.1
36	34.0	6.3	14.9	28.3
37	30.2	6.0	14.0	27.5
38	26.5	5.7	13.0	26.7
39	23.2	5.3	12.0	25.8
40	20.0	5.0	11.1	25.1
41	17.0	4.7	10.3	24.4
42	14.0	4.5	9.7	23.9
43	11.5	4.3	9.1	23.4
44	9.0	4.2	8.7	23.0
45	7.7	3.7	7.6	22.1
46	6.5	3.3	6.7	21.4
47	5.0	2.9	5.8	20.6
48	3.5	2.7	5.3	20.2
49	2.7	2.3	4.5	19.5
50	1.8	2.0	3.9	19.0
51	1.0	1.7	3.2	18.4
52	0.5	1.4	2.6	17.9
53	0.2	1.0	1.9	17.3
54	0.0	0.0	...	....

From it we can see, for instance, that of every group of freight cars placed in service, an average of 51.4 per cent have been found to be in service at the end of 20 years and 11.1 per cent at the end of 25 years. If history shows a certain rate of vacations in the past, it is well within the laws of probabilities to assume the same rate of vacations for the future unless some radical changes in operation are introduced.

From this curve or the data upon which it is built, we can derive an expectancy table showing the probable number of years of future service. To illustrate, from the curve and data for freight cars we find that at the end of 20 years there will remain an average of 51.4 per cent of the original number of cars and that these will have an average additional life of 3.8 years. We now have the two factors needed to establish the ratio of expectancy of future service to total service. If the car has been in service 20 years and has 3.8 years expectancy, the total will be 23.8 years and the per cent of remaining service will be the ratio of 3.8 to 23.8 or 15.3 per cent. This represents the expectancy of service. To

find the per cent of remaining value we of necessity apply this per cent to the depreciating portion of the total value and add to the resultant, the non-depreciating portions. With freight cars having an average salvage value of 24.7 per cent, the depreciating or wearing portion of the value is 75.3 per cent. With 15.3 per cent expectancy in remaining service at the end of 20 years, the expectancy in remaining value becomes (15.3 × 75.3) plus 24.7 or 36.2 per cent.

The expectancy in per cent of remaining value then becomes the measure of present value. It will be noticed that the present value curve never quite reaches the non-depreciating value line because so long as the article is in service there is some expectancy of future service.

In the data from which these curves have been drawn, the writer has included vacations from all causes. Cars and locomotives are all finally wrecked, destroyed by fire, converted into work equipment, dismantled or sold. Whatever the method by which its final abandonment is accomplished, the fact remains that so soon as the article is placed in service it becomes subject to a liability of destruction, obsolescence, inadequacy or decrepitude, and the measure of this liability is the measure of the effect that each of the various causes making vacations have had on similar equipment in similar service in the past.

TABLE 3

THE KATES DEPRECIATION STUDIES FOR FREIGHT CARS

Years in service	Per cent remaining in service	Expectancy in years of service	Expectancy in per cent of remaining service	Expectancy in per cent of remaining value
0	100	20	100	100
1	99.8	19	95	96.2
2	99.6	18	90	92.5
3	99.3	17	85	88.7
4	99.1	16	80.2	84.9
5	98.8	15.2	75.2	81.3
6	98.4	14.2	70.3	77.6
7	97.9	13.3	65.5	74.0
8	97.3	12.4	60.8	70.5
9	96.1	11.5	56.1	66.9
10	95.0	10.6	51.4	63.4
11	94.0	9.7	46.8	59.9
12	92.3	8.9	42.6	56.8
13	89.6	8.1	38.4	53.6
14	86.5	7.4	34.6	50.8
15	83.6	6.6	30.5	47.7
16	79.5	5.9	27.0	45.0
17	74.5	5.2	23.4	42.3
18	68.4	4.6	20.3	40.0
19	61.3	4.0	17.4	37.8
20	51.4	3.8	15.3	36.2
21	41.0	3.3	13.6	34.9
22	32.4	2.9	11.7	33.5
23	21.7	2.6	10.1	32.3
24	16.7	2.3	8.7	31.2
25	11.1	2.1	7.3	30.2
26	6.4	1.8	6.5	29.6
27	3.4	1.5	5.3	28.7
28	1.3	1.3	4.4	28.0
29	0.3	1.2	4.0	27.7
30	0.09	1.0	3.5	27.3
31	0.04	1.0	3.1	27.0
32	....	1.0	3.0	27.0
33	....	1.0	2.9	26.9
34	....	1.0	2.8	26.9
35	....	1.0	2.7	26.8
36	....	1.0	2.6	26.7

As stated above, the exception comes where there is a radical change in operating conditions. For instance, up to the present time the roads have universally dismantled freight cars when they reached a condition such that a practical rebuilding became necessary. Within the past year, however, this plan has just as universally been abandoned and the carriers are now rebuilding almost anything that has a number. This will, if carried on, give an extension to the average serviceable life of equipment. A fair approximation of what this extension will be can be determined if the mortality curves data for individual classes of cars, such as box cars, be divided so as to show the effect of the various causes making necessary the vacations. With such a division we find that a certain per cent of cars have been dismantled and also we find the ages or periods in which such dismantling has occurred. With this data in hand we can then compute the number of rebuildings possible, assuming that during the added life, these rebuilt cars will be subject to the same liability of accidental destruction and conversion into work equipment as are new cars.

A very interesting comparison of efficiency of design of any series of cars can be made by means of mortality curves such as are here presented. That is, if a curve be developed to show the average performance of a certain class of cars on a given road then a new series coming into service may, after it has been in service a few years, have its mortality curve developed, and from this a comparison made which will show readily whether or not the series is holding up to the average expectancy. Or the mortality curves for a given road may be compared with the average for all roads or for any one selected as a criterion and very interesting and instructive conclusions may be drawn.

United States Supreme Court on Patentees' Rights

By Paul Synnestvedt

IN CONNECTION with the discussion which has recently arisen relative to the question whether or not all rights in that species of property known as Letters Patent should be surrendered to the government during the period of the war without compensation to the patentee or owner, much importance would seem to attach to two recent decisions of the United States Supreme Court reported in the early April advance sheets of the Supreme Court Reporter of the West Publishing Company of St. Paul.

The two cases referred to are a suit relating to some of the patents on the Marconi wireless telegraph apparatus, the litigation on which went to the Supreme Court from the United States Circuit Court of Appeals in New York, and a suit relating to some Curtis marine turbine patents which went to the Supreme Court from the United States Circuit Court of Appeals sitting in Philadelphia.

In the Marconi case the Federal Court in New York had held in substance that under the present statutes touching the rights of a patentee against unauthorized use of his invention by the government, a competitor of the patentee could bid against the patentee, and if awarded the contract, could supply the government with the patented apparatus without other remedy to the aggrieved patentee than an action in the Court of Claims, under the federal Statutes relating to patent cases, for damages against the government arising out of the unauthorized use.

The Supreme Court strongly advanced the opposite view, condemning such violation of a patentee's rights as unlawful and unjust, while at the same time recognizing, of course, that it is within the sovereign power of the government to commandeer anything needful to government use, and that it is not open to any individual to obtain injunctive relief against such sovereign authority. The exercise of such sovereign right to appropriate for government use private property not surrendered by contract or consent was held to be proper only in accordance with the law, that is, according to proper and legitimate means, and with ample provision for safeguarding or protecting the owner of such commandeered property as against damage or loss.

The Supreme Court further refused to endorse the theory that had been advanced in the lower courts, and sustained in New York, that because of certain provisions in some federal statutes recently passed, the government should be regarded as holding a general license for the use of all patented inventions such as would enable it to obtain such patented apparatus from competitors of the patentee without the owner of the patent rights having any other relief than a suit for damages in the Court of Claims against the United States.

The net result of the Supreme Court rulings is that the

rights of a patentee against infringement by competitors in unlawful appropriation of patented inventions supplied to the government remain as before and unimpaired, and while the government clearly cannot be stopped from appropriating and using any invention which it may desire or need especially for promoting its activities in the war, such patented mechanism must be secured by or through the owner of the rights who, exactly as is the case with other personal property, has a right to look for and expect reasonable compensation.

Substantially the same questions arose in the litigation relative to the Curtis marine turbine patents, some of which had been incorporated without license in navy boats built for the government by The Cramp & Sons Shipbuilding Company; and this again came up in the United States Circuit Court of Appeals in the Third Circuit in connection with a controversy as to whether certain ships that had been so equipped were to be included with others in calculation of recoveries held to be due under patents which had been sustained by the United States Circuit Court of Appeals in Philadelphia.

The effect of the decision by the Supreme Court in both cases was to grant to the patentee his right of recovery against the infringer who supplied the government with the infringing turbines, and this action by the Supreme Court was apparently in support of the view held by the Philadelphia court.

Railroad Employees Breaking All Records in Liberty Loan

"I AM VERY PROUD, too, of the splendid work the officers and employees of the railroads of the United States are doing for the Third Liberty Loan. Their enthusiasm and loyalty have been conspicuous," said Director General McAdoo in Chicago last Sunday after his arrival from his trip through the South and Southwest.

Eastern Regional District

The Eastern Regional District Liberty Loan Committee, of which F. D. Underwood, president of the Erie, is chairman, reported on Wednesday that it had heard from 39 roads reporting total subscriptions of $23,925,050, about $21,000,000 of this having been taken by 325,000 men.

Several of the eastern roads are trying to break all records for total subscriptions, number of subscribers and percentage of subscribers to total employees.

The Delaware, Lackawanna & Western, on May 1, was able to report the following percentages:

	Number	Subscribers	Per cent
Station employees	1,078	1,078	100.0
Conductors	258	258	100.0
Trainmen	852	827	97.0
Switchmen	716	716	100.0
Yardmasters and clerks	329	329	100.0
Superintendents' offices	121	121	100.0
Shopmen, roundhousemen and carmen	5,704	5,376	94.3
Locomotive enginemen	994	937	94.4
Locomotive firemen	928	831	90.0

Several other departments have reported 100 per cent and the number is still increasing.

The total number of subscribers Wednesday had reached 29,893 and the total subscriptions $1,738,400. For all departments of the railroad the percentage of subscribers to total employees was 81.2 per cent.

On the Lehigh & Hudson River, the result of intensive work on a small road has been shown in subscriptions taken by 745 employees, 100 per cent of the personnel and a perfect record.

The Baltimore & Ohio reported up to the evening of April 29, subscriptions for $2,445,100.

The Erie up to Wednesday morning reported that 19,550 subscribers had taken $1,244,650. The mechanical department employees of the Marion division, including the Hammond, Ind., shops, turned out the splendid record of no less than 1,137 subscribers out of 1,150 employees.

The Pennsylvania Railroad System, lines east and west, on April 27 had taken $8,444,850 in bonds, there being 141,800 subscribers. On the lines west 71.83 per cent of all employees subscribed up to April 27.

New York Central

The New York Central up to noon April 30 had reported total subscriptions for the entire system by 109,446 employees, 63.8 per cent of the total employees, for $7,773,550. In the second loan 33,872 employees subscribed for $2,256,450. The New York Central's figures are as follows:

NEW YORK CENTRAL LINES LIBERTY LOAN COMMITTEE

SUBSCRIPTION TO THIRD LIBERTY LOAN REPORTED UP TO NOON, TUESDAY, APRIL 30, 1918

	Third Loan				Second Loan	
Road	Total Number of Employees	Number of Individual Subscriptions	Percentage of Total Employees Subscribed	Amount	Number of Individual Subscriptions	Amount
NYCRR, East	64,248	40,552	63.1	$3,001,700	13,450	$873,500
NYCRR, West	34,045	24,334	71.4	1,623,000	7,158	453,550
B. & A.	8,149	1,831	22.4	120,850	471	32,200
M. C. R. R.	15,390	9,794	63.6	665,000	3,630	266,750
C. C. C. & St. L.	23,042	17,718	76.8	1,263,750	5,832	398,150
Cin. Nor.	881	513	58.2	49,450	72	5,600
P. & L. E.	11,496	6,800	59.2	502,250	*	*
T. & O. C.	3,900	1,800	32.7	130,000	1,002	70,500
K. & M.	1,600				289	21,500
L. E. & W.	3,400	2,757	81.0	196,900	778	53,450
L. H. Belt	2,921	1,570	53.7	97,550	529	32,300
Rutland	2,300	1,777	77.2	123,200	661	48,950
Total	171,372	109,446	63.8	$7,773,550	33,872	$2,256,450

* Figures for Second Loan not available.

Special note—Total number of employees given—171,372—is entire payroll of all classes and departments of labor at this date, including large numbers of transient or "floating" workers, many of whom remain only for a few days, the constant changes making the "turn-over" often above 100 per cent a month.

On the New York Central there are 650 divisional and departmental committees, each with specific responsibility, territory and lists, these embracing as active workers more than 3,500 employees.

A specially-designed "Honor Flag" is awarded to each department showing 75 per cent of its personnel as subscribers to bonds, a star being added for each additional 5 per cent. Already numerous departments have reported "100 per cent subscribed" and claimed the flag with five stars. In the general offices at the Grand Central Terminal, New York, no less than 158 offices, some with a hundred or more employees, have received the 100 per cent flag.

Depew Shops 100 Per Cent

But the banner for the entire New York Central System to date apparently goes to the Depew shops where out of 650 employees 650 subscriptions were reported.

Girl employees with brothers or family members at the front form a unique branch of the New York Central organization selling Liberty bonds. They are the special "storm troops" or "shock squads," as it were, of the army of 3,500 bond canvassers, being used to win over those "hard cases" when other appeals have failed. When an employee who is well able to invest resists all efforts and is reported by the regular "team" as hopelessly indifferent or laggard, a "squad" of the girls makes the final effort. Every one of the girls has a brother, husband or father in the fighting forces, this being a necessary qualification, and with thoughts of the needs of their loved ones "over there" which the bond money would supply as an inspiration, their pleas seldom fail to convert reluctant investors.

For the final week of the bond-selling on the New York Central, the "Safety First" organization has changed its

slogan to "Liberty First." The regular "safety meetings" held by employees under direction of local committees have been devoted instead to arousing enthusiasm for the third bond issue.

"Safety First" Yields to "Liberty First"

Marcus A. Dow, general safety agent of the system, as this is written is holding a series of Liberty bond mass-meetings for railroad employees, on a fast tour that will cover all the big centers to Buffalo. Commencing at the Harmon shops, the schedule includes big rallies for employees at West Albany, Rensselaer, Utica, Frankfort, Syracuse, Depew, Rochester, Buffalo and Niagara Falls.

Two veterans of the war, invalided for wounds, accompanied Mr. Dow and addressed the railroad employees' gatherings, telling of conditions and their personal experiences in the trenches. These were Private L. C. Burgess, a bomber who saw three years' service with the famous Canadian "Princess Pats" and lost an eye for liberty, and Private H. J. Pickell, who served three years with the 24th Battalion, Canadian Infantry, and was wounded at Vimy Ridge.

The meetings in shops, roundhouses, at stations and in switching yards have been marked by the greatest enthusiasm, the railroad men being particularly interested in hearing about the American railway engineers who threw down their shovels and seized rifles at Cambrai, thereby becoming the first of our expeditionary forces in battle.

Western Regional District

W. G. Bierd, chairman of the Liberty Loan Committee for the western regional district, reported up to Saturday, April 27, total subscriptions of $40,878,030.

The reports of the leading railroads up to April 25 showed:

Road	Subscriptions	Per cent of employees
Atchison, Topeka & Santa Fe	$2,802,400	59.97
Chicago, Rock Island & Pacific	2,762,556	98.10
Chicago & North Western	2,536,650	65.72
Chicago, Milwaukee & St. Paul	2,500,100	75.41
Nor. Pacific	2,398,450	83.58
Great Northern	2,204,350	74.33
Missouri Pacific	2,055,000	78.48

Some idea of the way the Liberty Loan is going in the western district is shown by the complete tabulation of Class I roads up to April 25:

Total employees	714,973
Total subscribers	481,633
Per cent	67.36
Total subscriptions (April 25)	$36,673,780
Average per subscriber	$74.07

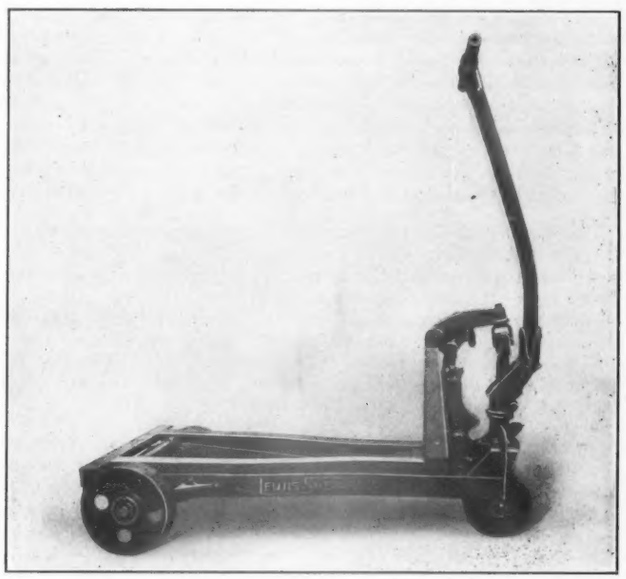
THE FUTURE OF DISABLED EMPLOYEES was considered at the recent meeting of the London & North-Western of England. Sir Gilbert Claughton, chairman of the company, said that the question of providing suitable employment on their return to civil life of those members of the company's staff who were disabled through war service, had engaged the attention of the directors and officers, special attention being given to those who were, or might be, incapacitated owing to the loss of a limb or an eye. In 57 such cases suitable work had been found for them by the company in positions such as time-keepers, ticket-collectors, watchmen, etc. Of the 1,987 men who had returned to the company, 1,913, or 96 per cent, had taken up their former positions at their proper rates of pay or had been placed in equally good positions at not less than their former remuneration. There were no cases where men had returned disabled and ready and fit to resume work that had not been provided for.—*Railway Gazette, London.*

A High Lift Industrial Truck

IN THE EFFICIENT HANDLING of freight and stock from platform to storeroom, different forms of industrial lift trucks are becoming more and more important factors and their use has spread to railroad repair shops and freight houses. One of these trucks, recently developed by the Lewis-Shepard Company, Boston, Mass., intended especially for railroad work, is shown in the illustration.

With a capacity of 3,500 lb. and large rear wheels to insure easy rolling, it combines the added advantage of a universal joint which permits the load to be raised with the handle in any position. In this way it is possible to use the truck in freight cars and other cramped quarters hitherto inaccessible, and a total lift of 2½ in. allows the wooden platforms to be pulled over inclines and other irregularities in the floor.

The load is elevated by a combination of leverages re-



Model 10 W S B Jacklift Master Truck

quiring from four to six short strokes of the handle and a ratio of 40 to 1 gives a powerful purchase. In lowering, a release check permits the load to descend slowly to the floor and eliminates the possibility of spills.

At one freight depot where this truck is in use, all incoming freight is unloaded directly onto small platforms made for the purpose. Platform and freight are then moved by the aid of a truck to destination without rehandling.

GERMAN RAILWAY TRAVELING.—In an article in the London Daily Mail, E. L. Pyke, a London business man who has recently been released from Ruhleben after 3½ years' internment, writes: "The Germans, even if they had food, are handicapped by the immense deterioration of the railways, of which I have heard nothing in England except an occasional suggestion that there is a shortage of axle-grease in Germany. I came back along the well-known Berlin-Flushing line from Charlottenburg to Goch. Before the war the Germans were proud not only of their roadbed but also of their rolling-stock. Well, the German railways are now no place for those who like smooth traveling. Although I was on the way to freedom and in the height of good spirits, the state of the railway wheels, but more particularly the state of the track, rendered conversation and sleep impossible. One wag of the party suggested that the wheels were square."

General News Department

Senator Jones, of Washington, has introduced a bill in Congress, S. 4370, to prohibit trespassing upon the cars or trains of common carriers in interstate commerce.

Ink, mucilage and paste are among the things which the Southern Pacific now makes for itself. The 45,000 employees of the Pacific system have also been encouraged to apply thrift to their office work. They are using 10,000 paper tubes to put over pencil stubs. The company uses 4,000 quarts of ink annually and 2,400 quarts of mucilage, and difficulty experienced in securing these articles led to manufacturing experiments at the Sacramento shops.

The shops of the Lake Erie & Western, at Lima, Ohio, were destroyed by fire on the night of April 24, together with 15 passenger cars and a number of freight cars. Estimated loss, including damage to 14 locomotives, $500,000. The fire is supposed to have been incendiary.

The conflagration followed a blaze discovered in the same place two hours earlier and later flames were discovered at three different places in the plant. Federal agents have been investigating the fire and one suspect has been arrested.

The New York-New Jersey Port Development Commission, a joint commission established by the states of New York and New Jersey, will soon begin the investigation of general traffic conditions at the port of New York, the legislature of New York having followed that of New Jersey in making an appropriation of $100,000 for the expenses of the commission. The chairman of the commission is William R. Willcox of New York City, formerly chairman of the New York State Public Service Commission, First District.

Twelve hundred war gardens were planted by employees of the Pennsylvania Railroad last year, and in a circular which has just been issued, urging employees to do even better this year, it is stated that the estimated value of the crops raised by the employees in these gardens last year was $250,000. The company leases these lands to employees at one dollar an acre. There are, on the lines east of Pittsburgh and Buffalo, about 2,800 acres of land owned by the company, none of it on the right of way. Garden primers have been secured from Washington and one will be given to every employee who is interested.

New York to Washington and back the same day, by two men in a Breguet biplane, is the latest American aeroplane record. This trip was made on Wednesday, April 24, by two French officers connected with the Aviation Mission to this country, Major Tulasne, and Lieutenant Flachaire. They left the Mineola field, 20 miles east of New York, at 9 a. m.; arrived in Washington at 12:15; started back at 3 and arrived at Mineola at 6 p. m. The distance traversed was approximately 500 miles, making the average rate of speed about 80 miles an hour. On Sunday, April 28, a flight from Washington to Mineola was made in about three hours by a 450 hp. airplane carrying four men.

Concrete barges, four of them, are to be used by the Navy Department for service in New York harbor to transport fuel oil. The order for the construction of the barges has been given to the Ambursen Construction Company, 61 Broadway, New York City. The vessels are designed to carry in the hold about 800 tons of oil and also may be used for carrying the same tonnage of coal or other cargo. This is the first official recognition by the Navy Department of the adaptability of reinforced concrete to ship construction. The vessels will be built at the yards of the Ambursen Company on the Hackensack river, and it is expected the first one will be launched by June 15.

Increases of fares on electric roads, made necessary by the high cost of living now imposed on these lines, seem likely to throw some passenger business to steam railroads, here and there. On the Boston & Maine, northward from Springfield, Mass., to Holyoke, eight miles, between which cities there are a dozen local trains each way daily, the fare (on these local trains) is 10 cents, reduced several years ago partly because of trolley-road competition; but now the electric line has advanced its fare to 20 cents, and for those passengers to whom the railroad is convenient the lower fare in the steam cars will be a decided attraction. The Boston & Maine expects, also, some increase in travel on its through trains, the fare on these trains, 20 cents, being no higher than that on the slow electric cars. From Westfield, ten miles west of Springfield, many workmen ride daily to the latter city, and the Boston & Albany, the parallel steam line, has been asked to put on additional local trains.

Annual Meeting of Pacific Railway Club

At the annual meeting of the Pacific Railway Club on March 14 at San Francisco, Cal., the following officers were elected for the coming year: President, P. P. Hastings, assistant general freight agent of the Atchison, Topeka & Santa Fe; first vice-president, G. W. Rear, general bridge inspector, Southern Pacific; second vice-president, J. H. Leary, assistant superintendent of the Western Pacific; treasurer, C. E. Norton, chief train despatcher, Southern Pacific. The club, which was organized in March, 1917, now has a membership of 279.

War Finance Corporation

President Wilson on Monday nominated four directors of the War Finance Corporation, who, with Secretary of the Treasury McAdoo, will administer the work of this organization in extending financial assistance to essential war enterprises. The directors nominated are W. P. G. Harding, governor of the Federal Reserve Board; A. B. Forbes of New York; Eugene Meyer, Jr., of New York; and Angus McLean of Wilmington, N. C. Members of the new capital issues committee, which is to investigate and pass upon proposals of industrial concerns to issue securities in excess of $50,000, were also nominated as follows: Charles S. Hamlin, member of the Federal Reserve Board and former Assistant Secretary of the Treasury, John Skelton Williams, controller of the currency and director of finance and purchases of the Railroad Administration, Frederic A. Delano, member of the Federal Reserve Board, Henry C. Flowers of Kansas City, Frederick H. Goff of Cleveland, James B. Brown of Louisville, Ky., and John S. Drum of San Francisco.

Associations Approved by the Railroad Administration

In last week's issue there was given a partial list of organizations the expenses of which the Railroad Administration has decided may or may not be charged to operating expenses after May 1. Additional organizations have since been approved until further order, including the following:

The International Railway Fuel Association, the Association of Transportation and Car Accounting Officers, the Railway Storekeepers' Association, the American Wood Preservers' Association, the Air Brake Association, the Master Car Builders' Association, the Bridge and Building Association, the Roadmasters' and Maintenance of Way Association, all car interchange bureaus, the Ore and Coal Exchange, the Tidewater Coal Exchange, the American Steamship Association, the New Orleans Steamship Association, the Kansas City and St. Joseph Clearing Houses, and various Texas associations.

Some organizations, including the American Railway Master Mechanics' Association, has not been passed on because they failed to file application. All local freight associations are approved until further notice, but their expenses must not exceed those of last year, except after specific authorization. The va-

rious claim associations, tariff issuing bureaus, classification committees, freight and passenger traffic associations and inspection bureaus have been given letters, saying:

"Consideration is now being given to the possible necessity of re-organization of associations similar to your own, with a view to economical and efficient operation. It is therefore impossible to determine how long the present method of organization and expenses should continue. Only such assessment as is necessary to meet your current expenses to May 30, 1918, should be with the understanding that if no order has been issued prior to that date you may continue to make such assessments until such notice is given."

Other organizations specifically disapproved are the Association of Railway Telegraph Superintendents, the Society of Railway Financial Officers, the American Society for Testing Materials, the Western Association of Short Line Railroads, the American Museum of Safety and the National Safety Council. The Bureau of Railway Economics may continue until July 1.

Expenses for R. Walton Moore, commerce counsel of the southeastern roads, have been approved until June 30.

Railroad Traffic in England

The Railroads of Great Britain find their passenger traffic now as heavy as it has been at any time in their history, although early in 1917, the government increased fares 50 per cent for the express purpose of diminishing the amount of travel. There was a falling off for a time, though not to the extent that had been anticipated; and now, according to a statement made by the president of the Board of Trade recently in Parliament, the volume of traffic has gradually risen so that the effect of the increase in fare is no longer apparent. The president of the Board of Trade was making a general statement on the condition of railway traffic and explaining how train service would have to be further curtailed, mainly because of an increase in the traffic in coal by rail because of the withdrawal of steamers from the coasting service. These steamers had been carrying about 3,000,000 of tons of coal yearly. The railroads have not been able to add any new cars or engines since the beginning of the war, while a good many locomotives and several thousand freight cars have had to be sent to France. Today, both passenger and freight traffic is heavier than ever before, and has to be carried on with a diminished number of cars and engines and a reduced personnel.

Government Advances to Railroads

The railroads to which the director general has furnished funds, either in the way of loans or as advances on account of rentals, to April 30, are reported as follows:

New York, New Haven & Hartford	$43,964,000
New York Central (including the Michigan Central, the Cleveland, Cincinnati, Chicago & St. Louis and the Pittsburgh & L. E.)	28,500,000
Pennsylvania	7,000,000
Baltimore & Ohio	5,000,000
Chicago, Rock Island & Pacific	3,000,000
Wabash	1,300,000
Minneapolis & St. Louis	750,000
Chicago, Indianapolis & Louisville	500,000
Buffalo, Rochester & Pittsburgh	400,000
Detroit, Toledo & Ironton	200,000
Total	$90,614,000

All of these advances were in the shape of loans, except $13,000,000 advanced on account of rentals for the first quarter of the current calendar year to the New York Central lines and $1,300,000 similarly advanced to the Wabash. Of the above aggregate of $90,614,000 advanced, $77,514,000 was obtained from the Treasury through the revolving fund provided for in the Railroad Act, and $13,000,000 was derived from funds turned over to the Railroad Administration from their surplus funds by certain railroad corporations. The payments to the New York Central include $10,000,000 for the New York Central itself, $900,000 each for the Michigan Central and the Big Four and $1,200,000 for the Pittsburgh & Lake Erie.

Overman Bill

Rejecting all amendments designed to limit the President's authority, the Senate on Monday, April 29, passed the Overman bill, which contains a general grant of power to the executive to co-ordinate and reorganize executive or administrative commissions, bureaus, agencies and offices of the government, by a vote of 63 to 13. An amendment proposed by Senator Cummins to except the Interstate Commerce Commission was voted down by a vote of 43 to 31. Throughout the protracted debate on this bill many senators had opposed it on the ground that it included authority to reorganize agencies of the government such as the Commission, the Federal Trade Commission and the Federal Reserve Board, which the opposing senators felt it was not necessary to affect because of any war condition. Because such determined opposition was manifested by the Administration leaders to any exception from the blanket authority it was frequently intimated that one of the purposes of the bill might be to give the President power to transfer the functions of the Interstate Commerce Commission to some other body. Senator Overman finally gave the Senate an assurance that it was not proposed to interfere with the Federal Reserve Board, the Interstate Commerce Commission and some other bodies, but a special effort to except them was made both during the consideration of amendments and at the time of the final passage of the bill. The proposed standard form of contract between the railroads and the government to govern the amount of compensation for the use of railroad property during federal control seems to contemplate the continued existence of the Interstate Commerce Commission, which is given the function of passing upon any question that may arise as to its interpretation.

Call for a Single Terminal Manager in Chicago

In a recent letter to Director General McAdoo, John F. Wallace, chairman of the Railway Terminal Commission of the Chicago City Council, recommends the unification of terminal operation in Chicago, under one manager; and the construction of such connecting tracks and other facilities as may be immediately necessary to render joint operation more practicable. His letter reads in part as follows:

"While the commission appreciates that the full development of a co-operative system will involve the construction of certain joint or common facilities which require careful consideration, it, however, believes that the existing facilities can be so arranged and operated as to substantially promote both efficiency and economy; and the purpose of this letter is to suggest to you the immediate appointment of a local manager and staff to operate all of the railway terminal facilities within the Chicago terminal district as a unit. The commission will be pleased to give to such a manager the benefit of its study of the terminal situation and will assist him in any way in its power.

"The commission believes that large efficiencies and economies can immediately be obtained by this procedure and that the actual operation of the Chicago terminal facilities as a whole will promptly develop practical steps for the development of the co-operative principle, and that the practical application of this principle in the manner suggested will demonstrate its desirability both to the railroads and to the public.

"The commission proposes to continue the preparation of its report, but it believes that the adoption by you of the suggestion above made need not await your consideration of any particular plan of terminal operation.

"If, however, suggestions—either as to a general plan of operation or as to any particular point or phase of the matter—would in your judgment be helpful, the commission will be glad to present such suggestions."

For the purpose of working out a plan for the co-ordination of Chicago terminals, R. H. Aishton, regional director of western roads, has already appointed a committee of railroad officers with George Hannauer, general manager of the Indiana Harbor Belt, as chairman. Spokesmen for the Railway Terminal Commission concede that Mr. Hannauer's committee is doing valuable work but contend that the committee plan of operation has the fault of recognizing individual

railroad systems as a basis. The Railway Terminal Commission, on the other hand, favors the obliteration of all forms of separate authority and interest in terminal matters and the re-organization and operation of the railroad terminal facilities of the Chicago district upon the basis of complete unity.

Western Regional Director's Orders

Misuse of Officers' Names.—In a letter sent out to the railroads on April 27, R. H. Aishton, western regional director, warns them to watch for the unauthorized use of government officers' names by shippers to expedite the movement of freight.

No Advertising for Labor.—In supplement No. 1 to circular No. 63, on Track labor, the regional director of western lines, reiterates the request that roads utilize as far as possible the employment service of the United States Department of Labor in securing track labor. Railroads should advertise for labor only in exceptional cases.

Grouping of Purchases of Stationery.—In circular R. P. C. No. 9 sent out by the Regional Purchasing Committee of the Western Railroads, attention is called to the wide discrepancy in prices paid by different roads for printing forms D. C. E. 1, 2, 3 and 4. Purchasing agents in the same locality should get together on matters of this kind and make all their purchases at one time. The same idea can be carried out to a large extent in connection with accounting and operating blanks.

Branches to New Coal Mines.—The regional director of western railroads has asked the lines under his jurisdiction to secure the approval of the United States Fuel Administration at Washington before completing arrangements for the construction of tracks for the opening of new mines. While the Fuel Administration realizes the necessity of keeping up the production of coal, it does not believe new mines should be opened unless the work can be done without taking labor from mines already developed and capable of producing more coal than at present. It is urged that transportation facilities serving existing coal mines, where inadequate, be enlarged before new undertakings are initiated. Approval for the building of tracks to new mines should be obtained from the United States Fuel Administration through the mining company interested.

Statistics of Receipts and Expenses.—Circular No. 69, issued by the regional director of western railroads, directs the lines in his district to send to C. R. Gray, director of the division of transportation, Washington, two copies of the following reports, and one copy to the regional director, for the months of January, February and March; and for each month thereafter: (1) Detailed income with comparisons with last year, and expenses by primary accounts; (2) Transportation officers' reports used to measure efficiency and cost of operation; (3) Report used to measure efficiency and cost of locomotive performance; (4) Usual explanations provided for president or chief operating officer covering increases and decreases.

Cement Estimates.—The regional purchasing committee of western roads has addressed a communication to purchasing agents pointing out that there may be a shortage of cement and asking that they file with the requirements division estimates of their needs for the year; (a) The number of barrels required. (b) What part of your requirements has been contracted for or purchased? (c) Names and addresses of companies with which you have contracts, or with which you have placed orders, the quantity, price, and f. o. b. point in each instance. (d) Location of mills from which the balance of your supply would naturally come, in order to most economically serve your company, taking into consideration transportation and price.

Handling of Complaints and Car Reports

In circular No. 81, recently issued by the regional director of western railroads, lines in western territory are requested to acknowledge promptly inquiries or complaints from patrons. Some lines are said to be lax in this regard. Complaints sent to individual lines by the regional director's office need not be acknowledged to the regional director unless the communication of transmittal so requests. In handling these complaints roads should communicate directly with the complainant and where the complaint appears to be serious should have representatives adjust the matter by conference. Traffic officers relieved from other duties can be used to good advantage in this work. All communications from the regional director's office requiring answers should be given prompt attention.

Western roads are also instructed to systematize the making of reports to the regional director's office and to the Car Service Section of the Railroad Administration, as well as to their representatives at various points, so that it will be unnecessary to telegraph or telephone for reports that have been overlooked. Where this work is of great volume it may be advisable to establish special representatives in larger terminals and general offices to prepare these reports.

The roads are also requested to advise the regional director from time to time on matters of general interest as the following: (a) crop conditions; (b) general movement of traffic, as compared with last year; (c) impending large movement of any particular traffic and arrangements made to handle it; (d) general car situation; (e) changes in methods of operation effecting economies; (f) labor situation; (g) traffic interruption due to storms or otherwise; (h) serious collisions or derailments; (i) suggestions for changes in handling traffic that will result in economies or in expediting movement.

Committees to Buy Ties

The regional purchasing committee of western railroads recently issued circular No 6 containing the names and territories of sub-committees for the purchase, inspection and handling of crossties as follows:

Michigan and Wisconsin—
- I. E. Seddon, purchasing agent, C. St. P. M. & O., St. Paul, Minn., chairman.
- E. T. Stone, purchasing agent, M. St. P. & S. Ste. M., Minneapolis, Minn.
- L. S. Carroll, general purchasing agent, C. & N. W., Chicago.

Minnesota and West to Cascade Mountains, and South to Northern Boundary of Iowa, South Dakota, Wyoming and the Salmon river in Idaho—
- F. G. Prest, purchasing agent, N. P. St. Paul, Minn., chairman.
- J. W. Taylor, assistant to president, C. M. & St. P., Chicago.
- F. A. Bushnell, purchasing agent, G. N., St. Paul, Minn.

West of Cascade Mountains and South to California Line and South of Salmon River in Idaho—
- G. W. Saul, purchasing agent, O.-W. R. & N., Portland, Ore., chairman.
- F. G. Prest, purchasing agent, N. P., St. Paul, Minn.
- F. A. Bushnell, purchasing agent, G. N., St. Paul, Minn.

California, Nevada, Utah, Arizona and New Mexico—
- F. W. Taylor, general purchasing agent, S. P., San Francisco, Cal., chairman.
- M. J. Collins, general purchasing agent, A. T. & S. Fe, Chicago.
- W. T. Jacobs, purchasing agent, W. P., San Francisco, Cal.

Colorado, Wyoming, South Dakota, Nebraska and Iowa—
- L. N. Hopkins, purchasing agent, C. B. & Q., Chicago, chairman.
- F. D Reed, general purchasing agent, C. R. I. & P., Chicago.
- W. E. Lefaivre, purchasing agent, D. & R. G., Denver, Col.

Missouri, Kansas, Arkansas, Oklahoma and Illinois—
- N. M. Rice, second vice-president, St. L.-S. F., St. Louis, Mo., chairman.
- C. A. How, general purchasing agent, M. P., St. Louis, Mo.
- W. S. Atkinson, purchasing agent, K. C. S., Kansas City, Mo.

Texas and Louisiana—
- N. P. Randolph, purchasing agent, Sunset Central Lines, New Orleans, La., chairman .
- T. H. Ryan, purchasing agent, V. S. & P., New Orleans, La.
- R. L. Irwin, purchasing agent, T. & P., New Orleans, La.

Each committee is to make a comprehensive survey of its respective territory and report to the regional purchasing committee. This circular is accompanied by a questionnaire, regarding tie requirements.

Joint Switching Arrangements

The regional director of western railroads recently issued circular No. 82 on the subject of joint switching, his purpose being to determine what further action is necessary in connection with economies in switching where two or more lines serve the same industry. Where conferences have not been held between interested lines to consider joint operation they are requested to do so at once. In determining as to joint operation at any point, full consideration must be given to: 1. Public convenience. 2. Rights of men involved. 3. Expediting movement of traffic. 4. Economies to be effected. Where a joint arrangement proposed will seriously affect public convenience, a conference should be arranged with concerns interested; and where rights of men are involved and the plan is likely to cause protest from them, it should not be put in effect until agreement is made with the organizations interested.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1918

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Atlanta & West Point	93	$71,052	$71,553	$165,736	$17,532	$29,398	$4,113	$59,467	$5,117	$118,491	71.49	$47,244	$7,600	$39,644	$8,306
Balto. & Ohio	4,948	4,864,320	1,763,372	7,531,635	1,272,062	2,637,846	189,002	5,540,268	285,653	10,005,647	132.85	—2,474,013	390,658	—2,867,826	—5,150,316
Boston & Maine	2,305	2,344,981	1,277,655	4,110,648	560,047	878,897	36,867	2,947,307	139,094	4,593,924	111.76	—483,276	174,831	—658,107	—1,474,802
Buff., Roch. & Pitt	584	942,582	103,903	1,084,741	155,668	431,211	15,687	554,601	31,811	1,190,762	109.77	—106,021	25,614	—131,658	—290,646
Can. Pac. Line in Me	233	185,378	31,943	233,219	35,331	53,887	4,580	194,553	2,902	291,253	124.88	—58,034	9,500	—67,534	—166,508
Carolina, Clinchfield & O	282	269,079	26,691	300,978	24,294	57,114	14,615	100,006	14,359	210,380	69.90	90,648	14,800	75,848	—89,355
Carolina, Clinchfield & O. of S. C	18	14,400	2,033	16,930	1,487	126	2,207	4,854	989	9,664	57.08	7,267	1,000	6,262	—1,669
Cent. of N. J	684	1,679,158	483,487	2,434,532	250,450	607,757	25,508	1,444,416	66,846	2,413,641	99.14	20,891	200,025	—181,109	—839,054
Cent. of N. Eng	301	324,937	25,644	372,258	62,531	49,853	1,158	204,683	8,042	326,732	87.77	45,526	17,100	28,425	—112,581
Chgo., Mil & St. Paul	10,305	5,050,531	1,489,369	7,492,519	930,675	2,091,441	135,484	4,240,187	210,775	7,583,683	101.22	—91,164	510,906	—603,589	—2,265,914
Chgo., Peoria & St. Louis	247	98,349	19,441	125,098	22,514	48,082	5,329	89,226	5,996	171,146	137.81	—46,049	6,750	—52,799	—84,253
Colo. Midland	337	102,993	15,038	126,641	22,607	28,799	6,799	84,551	4,910	148,594	117.33	—21,953	6,864	—28,817	*
Cripple Creek & Colo. Sprgs	116	67,023	10,844	79,635	7,556	6,941	921	28,302	3,514	47,234	59.31	32,401	4,142	28,259	—27,774
Georgia	328	227,526	110,997	431,997	33,549	58,650	12,149	198,273	10,335	313,147	72.49	118,851	5,950	112,818	39,202
Ga., Southern & Fla	402	144,925	96,947	266,776	38,238	55,523	6,556	114,669	10,198	226,819	85.02	39,957	14,042	25,474	—26,349
Ill. Cent.	4,765	4,306,108	1,456,251	6,333,078	1,354,166	1,590,191	90,953	3,058,083	185,738	6,316,039	99.73	17,039	373,462	—357,561	—1,839,203
Ind. Harbor Belt	116	.....	.....	211,994	129,620	63,195	2,065	223,774	10,381	429,535	202.62	—217,541	8,987	—226,528	—336,998
Kansas City Sou	774	842,686	166,330	1,091,213	97,024	184,524	24,573	419,822	35,935	760,772	69.72	330,441	56,986	273,105	—60,495
Los Ang. & Salt Lake	1,154	630,578	287,712	1,013,989	172,673	188,600	34,010	384,349	23,991	821,744	81.04	192,246	63,676	128,554	—88,295
Maine Cent.	1,216	605,872	270,255	951,781	244,716	231,092	10,949	666,135	30,417	1,183,305	124.33	—231,524	68,228	—299,798	—444,249
New York Cent.	6,079	9,605,721	4,152,917	16,246,807	2,281,959	4,322,259	230,571	8,734,624	492,238	16,361,205	101.70	—114,398	898,549	—1,014,505	—4,694,445
New York, New Haven & Hartford	1,992	2,487,321	2,606,245	5,989,365	804,717	1,182,399	35,699	3,411,118	220,201	5,782,857	97.55	206,507	266,000	—60,043	—1,786,730
Spokane, Portland & Seattle	554	512,592	180,855	737,832	58,445	52,459	6,199	203,096	15,945	340,349	47.13	397,483	72,000	325,452	126,403
Vicks., Shreve. & Pac	171	111,666	62,814	200,754	17,860	35,415	5,829	66,665	6,414	134,755	67.12	65,999	9,000	56,999	—6,205
Western Pac.	974	729,603	93,977	858,292	115,737	121,187	19,477	285,040	21,710	574,092	66.89	284,200	40,924	243,230	80,378
Western Ry. of Ala	133	103,461	63,679	182,440	23,241	35,720	5,298	57,406	5,581	129,841	71.17	52,599	6,000	46,599	18,635
Yazoo Miss. Valley	1,381	1,036,289	389,381	1,512,501	210,538	288,669	18,862	581,427	40,783	1,142,362	75.53	370,139	61,528	308,237	—100,416

MONTH OF FEBRUARY, 1918

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ala. & Vicks	141	$104,706	$44,258	$168,429	$15,330	$36,402	$5,008	$71,796	$6,920	$136,800	81.22	$31,629	$10,500	$21,129	—$11,281
Atlanta & West Point	93	87,270	60,883	166,043	18,060	26,828	3,712	61,509	4,754	117,699	70.88	48,344	7,600	40,744	11,491
Atlantic & St. Lawrence	166	100,636	18,053	128,997	55,274	39,382	3,370	154,229	5,778	258,032	200.03	—129,035	11,346	—140,381	—136,627
Boston & Maine	2,305	2,343,453	1,158,003	3,937,317	571,158	794,475	31,756	2,610,977	117,604	4,152,032	105.45	—214,716	172,967	—387,683	—630,331
Buff., Roch. & Pitt	584	970,078	95,026	1,096,031	149,499	399,129	15,015	528,225	30,509	1,124,089	102.56	—28,058	25,614	—53,734	—183,721
Can. Pac. Lines in Me	233	194,829	14,589	223,269	45,515	48,475	4,236	172,627	2,375	273,227	122.37	—49,957	9,500	—59,457	—134,243
Carolina, Clinchfield & O	282	316,065	27,849	348,718	42,942	69,491	13,975	100,174	12,561	238,785	69.47	109,933	14,800	95,133	4,061
Carolina, Clinchfield & O. of S. C	18	15,565	1,935	17,953	2,481	154	2,297	4,886	805	10,624	59.17	7,328	1,000	6,328	—1,354
Cent. of N. J	684	1,826,722	492,176	2,637,714	235,746	663,968	23,048	1,407,729	72,520	2,414,998	91.56	222,716	117,749	104,888	—402,764
Cent. of New Eng	301	329,524	22,878	374,258	55,029	72,902	1,249	221,283	7,289	359,451	96.04	14,807	17,100	—2,310	—28,239
Chgo., Det. & Can. Grd. Trk. Jct	60	44,106	9,028	66,598	10,195	14,991	1,453	67,735	2,558	96,932	145.55	—30,334	3,345	—33,736	—51,849
Chgo., Mil. & St. Paul	10,305	5,145,298	1,330,660	7,322,766	868,569	2,132,056	109,570	4,496,899	212,289	7,789,194	106.37	—466,428	521,796	—988,646	—835,448
Chgo., Peoria & St. L	247	129,773	20,657	157,245	19,150	48,387	5,703	86,107	8,346	167,692	106.64	—10,447	6,750	—17,197	—41,349
Colo. Midland	337	104,505	10,000	120,787	19,396	22,229	6,825	87,176	4,888	141,184	116.88	—20,397	6,864	—27,261	*
Cripple Creek & Colo. Sprgs	116	58,940	9,787	70,799	5,359	12,464	972	25,445	3,356	47,596	67.23	23,203	4,142	19,061	—30,117
Det., Grand Haven & Mil	190	133,000	34,000	199,725	23,456	36,004	4,302	162,162	8,505	234,430	117.38	—34,705	3,444	—38,156	—44,762
East St. L. Connecting R. R	3	.....	.....	74,273	10,806	9,436	372	58,688	3,798	83,099	111.88	—8,827	1,652	—10,479	—19,908
Georgia	328	311,433	109,349	449,566	35,357	52,905	11,324	197,015	10,929	307,706	68.45	141,860	5,950	135,907	83,669
Grand Trunk West	347	419,000	102,000	567,181	100,563	194,369	16,749	328,663	23,993	718,744	126.72	—151,563	37,649	—189,214	—222,411
Houston, East & West Texas	190	118,822	30,369	158,592	15,437	19,621	1,951	62,043	3,189	102,201	64.44	56,388	6,540	49,841	6,114
Houston & Texas Central	948	490,991	131,022	668,632	69,924	101,254	14,064	266,980	18,457	470,565	70.38	198,067	37,030	160,815	6,614
Indiana Harbor Belt	116	.....	.....	339,694	73,953	112,560	826	240,722	10,422	438,483	129.08	—98,789	8,987	—107,776	—153,631
International & Great Northern	115	631,683	280,129	988,964	116,730	180,495	19,343	415,227	33,187	762,302	77.08	226,661	30,000	196,346	59,367
Kanawha & Michigan	176	239,299	43,662	291,347	51,776	104,173	2,698	97,478	8,286	264,410	90.75	26,937	17,150	9,787	—10,673
Kans. City, Mex. & Orient	272	74,819	10,356	88,363	16,789	35,332	4,736	52,018	6,774	115,650	13,088	—27,287	6,250	—33,537	—26,169
Kansas City, Mex. & Orient of Tex	465	820,244	10,072	97,805	17,429	27,453	3,838	50,995	3,566	103,281	105.60	—5,476	5,000	—10,476	—8,530
Kansas City Terminal Co	24	.....	.....	85,887	7,212	14,319	.....	41,063	1,373	64,179	74.72	21,708	20,262	1,447	—13,902
Lake Erie & Western	900	494,119	43,257	564,497	73,052	143,829	10,577	301,222	18,194	546,875	96.88	17,622	24,879	—7,473	—138,022
Lehigh & Hudson River	96	118,106	3,371	126,836	20,474	49,256	1,799	74,773	4,762	131,065	10.433	—4,229	6,000	—10,229	—44,488
Lehigh & New England	296	180,152	1,518	191,409	39,165	50,452	2,304	92,409	8,138	192,449	100.54	—1,040	8,616	—9,656	—69,715
Long Island	398	307,134	662,034	1,095,135	172,617	188,676	8,148	641,661	38,368	1,060,967	97.88	34,167	75,972	—41,809	—6,794
Louisiana & Ark	302	115,787	25,824	147,068	25,681	20,096	3,533	45,433	5,040	99,784	67.85	47,285	10,416	36,869	31,112
Louisville & Nash	5,074	4,789,937	1,549,931	6,724,821	810,424	1,382,474	116,272	2,572,939	120,390	5,025,039	74.72	1,699,782	237,357	1,461,536	—24,918
Louisville, Hend. & St. Louis	199	160,666	40,855	209,721	26,759	32,952	6,034	79,689	3,996	149,848	71.45	59,873	3,800	56,068	—6,852
Los Ang. & Salt Lake	1,154	516,542	377,832	969,752	161,411	201,788	27,906	344,001	22,099	771,760	79.58	197,992	63,676	133,397	—41,027
Lou. Ry. & Nav. Co	356	172,711	28,016	211,476	26,796	29,815	4,960	94,825	6,744	163,140	77.14	48,336	14,000	34,324	2,125
Lou. West	207	232,305	80,443	329,896	17,336	35,226	6,925	73,687	9,745	145,200	44.01	184,696	14,605	170,055	60,424
Maine Cent.	1,216	597,087	230,182	895,612	203,468	186,366	10,118	609,280	27,385	1,036,653	115.75	—141,041	68,228	—209,275	—291,289
Md., Delaware & Va	82	15,351	5,527	21,461	3,325	6,776	509	30,625	1,411	42,647	198.72	—21,185	1,116	—22,303	—9,743
Michigan Cent.	1,861	2,688,939	876,532	4,038,759	486,247	869,701	74,009	2,025,181	86,715	3,605,382	89.27	433,377	147,000	286,098	150,997
Midland Valley	386	187,777	50,766	249,360	45,062	30,833	3,331	95,103	9,852	184,180	73.86	65,180	6,827	58,320	11,533
Mineral Range	100	80,040	1,926	84,346	17,100	15,646	321	53,544	1,162	87,772	104.06	—3,427	3,300	—6,727	—4,192
Minneapolis & St. Louis	1,646	612,868	161,839	818,353	107,668	171,448	16,448	431,204	24,812	751,868	91.88	66,484	51,326	14,446	—106,457

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF FEBRUARY, 1918, CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Minn. International Ry Co.	195	$56,114	$22,336	$82,428	$10,562	$14,665	$470	$44,024	$2,725	$72,447	88.89	$9,981	$4,088	$5,892	—$19,923
Minn., St. Paul & Sault Ste. Marie	4,227	1,480,561	383,653	2,036,901	290,561	444,851	36,811	1,109,352	69,661	1,959,563	96.20	77,338	179,085	—101,747	—304,130
Missouri & North Arkansas	365	77,530	33,858	119,767	23,778	22,828	2,849	52,605	5,296	107,282	89.58	12,485	5,482	6,903	—16,620
Missouri, Kansas & Texas System	3,869	2,241,516	991,252	3,489,972	332,947	351,777	58,416	1,701,819	133,679	3,305,143	94.70	184,827	106,455	78,534	—107,549
Missouri, Okla. & Gulf	332	114,837	26,600	148,444	31,506	34,273	2,470	79,138	8,247	155,775	104.94	—7,331	9,000	—16,343	—31,172
Missouri, Okla. & Gulf of Tex.	9	17,233	510	18,177	971	1,095	297	3,798	520	6,681	36.86	11,497	251	11,246	8,316
Missouri Pacific	7,301	4,405,429	1,322,600	6,261,678	846,196	1,146,619	121,179	2,564,893	154,037	4,856,391	77.55	1,405,486	269,580	1,134,560	.....
Mobile & Ohio	115	737,239	143,177	936,998	131,854	279,276	35,787	436,720	31,456	915,095	97.66	21,903	42,596	—21,020	—169,938
Monongahela	108	162,987	15,888	182,852	44,438	15,709	1,140	73,870	4,239	139,397	76.23	43,455	3,811	39,641	—31,004
Monongahela Connecting	5	.....	.....	125,609	33,054	26,327	387	77,085	4,613	141,467	112.62	—15,858	2,220	—18,079	—58,063
Morgan's La. & Tex. R. R. & S. S. Co.	400	427,102	124,039	589,582	53,732	79,598	10,212	195,494	14,959	256,706	43.54	232,876	29,581	203,102	44,785
Nash., Chatt. & St. L.	1,236	996,669	324,440	1,403,776	146,424	266,863	47,571	611,411	36,896	1,113,389	79.31	290,387	33,334	256,901	47,525
Nevada Northern	168	155,284	12,886	173,280	18,037	21,580	702	43,884	4,989	89,285	51.53	83,995	10,398	73,597	—19,171
New Orleans & Northwestern	203	288,687	109,898	443,887	50,151	77,496	7,986	188,160	10,586	336,174	75.73	107,714	36,273	71,401	—17,421
New Orleans Great Northern	284	119,944	30,842	158,015	16,489	28,119	2,673	54,644	6,849	109,071	69.03	48,944	8,132	40,721	7,141
New York Central	6,079	10,620,955	3,855,471	16,882,343	2,247,830	3,963,180	207,696	8,342,182	499,554	15,512,676	92.88	1,369,668	854,766	513,422	—567,282
New York, Chicago & St. L.	571	1,032,419	53,226	1,119,983	170,048	218,358	36,950	635,535	39,329	1,102,962	98.48	17,021	57,500	—40,479	—148,430
New York, N. Haven & Hartford	1,992	2,698,624	2,409,319	5,918,148	794,650	1,066,728	38,896	3,052,588	204,471	5,286,969	89.33	631,179	266,000	362,384	—646,632
New York, Ontario & Western	567	517,654	76,067	682,429	77,220	151,162	7,629	380,537	20,242	636,792	93.31	45,637	22,721	22,916	—57,521
New York, Phila. & Norfolk	112	238,354	76,884	357,678	29,124	82,805	7,799	221,250	11,064	362,076	101.23	—4,398	14,044	—18,441	—34,928
New York, Susq. & Western	135	188,950	40,803	258,460	27,459	39,056	1,499	189,570	6,341	263,874	102.09	—5,413	17,086	—22,500	—39,300
Norfolk & Western	2,085	4,298,978	569,895	5,076,193	623,932	1,301,858	57,862	2,017,752	104,614	4,118,967	81.14	957,226	272,000	683,726	—868,982
Norfolk Southern	907	311,620	90,688	432,797	61,812	56,540	6,486	187,844	19,049	331,827	76.67	100,968	15,823	85,146	—27,491
Northern Pacific	6,600	4,405,003	1,082,733	6,031,437	731,797	1,007,284	84,950	2,726,457	131,825	4,708,440	78.06	1,322,996	433,597	889,047	—666,685
Northwestern Pacific	507	161,352	119,999	315,553	56,294	39,751	4,644	130,724	9,266	239,496	75.90	76,058	20,947	55,106	35,887
Penn. R. R.	5,284	11,233,919	5,421,829	18,928,901	3,390,835	5,943,144	227,976	10,875,879	641,640	21,439,076	114.26	—2,510,175	840,551	—3,354,259	—4,074,027
Peoria & Pekin Union	19	19,354	5,768	95,386	11,935	16,014	28	65,498	3,135	96,609	101.28	—1,224	9,475	—10,699	—4,565
Pere Marquette	2,245	1,181,105	208,989	1,542,527	255,637	349,208	32,740	841,857	59,895	1,541,636	99.94	890	52,523	—51,978	—32,218
Phila. & Reading	1,126	3,620,828	553,312	4,475,363	423,385	1,279,574	55,557	2,607,764	97,829	4,476,204	100.01	—841	137,654	—138,544	—1,308,520
Pitt. & Lake Erie	224	1,577,697	153,166	1,881,432	380,773	441,937	14,335	729,994	39,659	1,609,866	85.57	271,566	113,200	158,366	—144,265
Pitt. & West Va. Ry.	63	77,731	8,411	97,922	17,973	26,835	757	51,057	8,144	109,864	112.20	—11,942	8,997	—20,939	.....
Pitts. & Shawmut	94	73,078	4,004	78,139	18,516	25,441	955	31,327	3,280	79,519	101.77	—1,380	3,826	—5,206	—33,352
Port Reading	21	61,292	.....	92,665	9,715	15,302	40	96,889	522	122,479	132.17	—29,814	9,611	—39,425	—37,482
Rich., Fred. & Pot.	87	145,712	162,723	350,517	21,477	48,143	3,396	153,425	8,958	242,667	69.23	107,850	12,626	95,286	—39,559
Rutland	415	155,403	65,107	262,626	38,477	66,805	7,957	164,871	7,750	286,976	109.27	—24,290	18,397	—42,692	—59,264
Seaboard	3,561	1,700,739	738,299	2,704,291	308,625	532,330	72,921	1,166,489	76,329	2,177,039	81.50	527,252	119,062	408,021	—313,721
South Buffalo Ry. Co.	35	40,462	.....	73,112	9,685	15,570	895	56,540	1,539	84,229	115.21	—11,116	1,400	—12,516	—37,992
Spokane International Ry. Co.	163	50,813	12,695	65,581	8,350	5,530	1,473	23,010	4,134	42,499	64.80	23,081	3,202	19,842	8,343
Spokane, Portland & Seattle	554	381,610	140,788	556,429	51,024	47,263	6,269	175,676	15,388	299,534	53.83	256,895	72,000	184,811	3,893
Staten Island Rapid Transit	23	23,396	41,437	71,018	22,628	16,731	1,351	59,516	5,345	105,571	148.65	—34,553	9,000	—43,553	—46,812
St. Joseph & Grd. Island	257	176,609	28,685	215,754	43,882	25,413	3,214	94,079	6,500	173,586	80.46	42,168	8,607	33,547	1,870
St. Louis, Mechant's Bridge Terminal	9	.....	403	239,651	33,494	20,669	896	157,101	4,351	216,511	90.34	23,140	8,000	15,140	—37,786
St. Louis-San Francisco	4,761	2,521,545	1,327,515	4,167,646	651,058	985,138	52,739	1,889,318	132,644	3,704,884	88.90	462,762	223,496	237,315	—870,761
St. Louis Southwestern	1,783	1,190,729	298,630	1,578,682	178,205	257,270	46,895	528,141	55,595	1,067,054	67.59	511,628	75,918	435,536	120,176
San Ant. & Aransas Pass	732	222,278	686,620	324,075	39,414	60,940	7,162	166,311	14,568	288,157	88.92	35,918	15,000	20,835	38,133
Southern	6,892	4,776,609	2,311,596	7,775,887	933,106	1,367,718	124,786	3,042,513	183,301	5,696,070	73.25	2,079,817	305,332	1,771,867	412,096
Southern in Mississippi	278	58,362	40,295	108,329	21,196	9,652	2,352	48,199	3,764	85,163	78.62	23,166	9,000	14,162	16,639
Southern Pacific	7,102	6,591,080	2,664,124	10,148,591	1,240,953	1,760,383	155,810	4,570,068	260,668	8,159,945	80.40	1,988,745	579,143	1,407,382	—901,768
Tennessee Central	292	106,536	33,173	148,382	27,500	30,013	3,406	75,465	7,363	143,747	96.88	4,635	5,444	—811	—13,365
Terminal R. R. Ass'n of St. Louis	36	.....	2,441	274,015	57,677	26,758	933	137,021	5,788	230,362	84.07	43,653	28,717	14,936	—75,176
Texarkana & Ft. Smith	81	63,209	13,395	83,854	10,115	6,200	1,889	37,504	3,364	58,824	70.15	25,029	9,152	15,878	—4,234
Texas & New Orleans	469	392,184	129,023	562,878	53,473	103,844	6,052	192,727	11,092	385,388	68.47	177,490	23,000	154,354	45,685
Texas & Pacific	1,946	1,221,300	483,903	1,852,364	211,664	279,792	34,188	792,311	68,103	1,399,769	75.57	452,595	86,936	365,282	89,189
Toledo & Ohio Central	435	.....	457,515	529,391	127,705	154,332	6,612	290,139	13,357	593,825	112.17	—64,434	26,247	—90,686	—69,406
Toledo, Peoria & Western	247	81,005	32,883	119,577	16,899	87,608	2,932	63,619	4,339	115,398	96.51	4,180	8,500	—4,320	—3,019
Toledo, St. Louis & Western	454	444,015	18,342	482,383	81,218	106,381	15,861	205,563	9,327	418,351	86.73	64,032	26,100	37,932	—37,191
Trinity & Brazos Valley	368	68,934	4,483	79,344	24,551	30,642	1,847	40,532	7,926	105,498	132.96	—26,154	6,580	—32,734	14,909
Ulster & Delaware	128	26,179	11,872	51,177	8,974	9,732	952	36,264	3,349	59,699	116.65	—8,521	4,600	—13,121	—5,728
Union R. R. of Balto.	8	92,921	52,120	147,220	9,878	.....	.....	10,533	3,105	23,515	56.73	123,704	8,299	115,405	—4,501
Union R. R. of Penna.	35	.....	.....	326,081	44,778	212,184	186	265,980	5,403	528,514	162.08	—202,433	5,673	—208,106	—186,657
Utah Ry.	100	94,228	511	95,111	7,118	10,330	181	23,131	6,655	47,415	49.85	47,696	3,518	44,178	*
Vicks., Shreve. & Pac.	171	120,036	54,633	197,994	19,173	31,797	5,205	64,184	6,772	130,196	65.76	67,798	9,000	58,798	11,510
Virginian	518	672,495	40,702	765,070	77,063	152,253	6,167	311,775	14,385	563,211	73.62	191,859	41,250	150,608	—71,586
Wabash	2,519	1,767,031	565,855	7,582,547	283,564	607,238	66,809	1,593,506	75,080	2,643,252	103.35	—60,705	105,236	—166,134	—757,832
Wash. Sou.	35	51,066	104,973	196,683	15,324	36,749	1,230	83,386	4,278	144,182	73.31	52,501	5,460	47,041	—31,529
West Jersey & Seashore	359	153,126	283,841	480,805	138,901	102,622	6,820	310,601	17,964	581,938	121.03	—101,133	40,536	—141,729	41,342
Western Maryland	707	764,730	69,240	903,314	148,931	314,522	18,431	465,393	29,928	987,193	109.29	—83,879	43,200	—127,079	—383,387
Western Pac.	1,007	606,723	75,005	717,919	105,172	104,381	22,288	265,456	20,864	528,202	73.57	189,717	41,202	148,471	93,575
Western Ry. of Ala.	133	102,261	51,839	167,140	23,998	32,232	4,875	57,744	5,775	127,059	76.02	40,000	6,000	34,080	16,125
Wheeling & Lake Erie	512	624,894	76,776	203,479	96,979	187,402	6,765	353,110	23,497	669,908	329.23	33,571	47,700	14,202	—124,797

*Was a lessor company.
*Began operation June 1, 1917.

REVENUES AND EXPENSES OF RAILWAYS

TWO MONTHS OF CALENDAR YEAR, 1918

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ala. & Vicks	141	$211,410	$94,420	$345,607	$29,944	$72,180	$10,484	$150,249	$13,906	$279,291	80.81	$66,316	$21,000	$45,316	—$24,323
Alabama Great Southern	312	707,305	320,130	1,106,389	95,701	262,991	26,446	434,328	24,932	849,934	76.82	256,455	41,377	214,979	—27,579
Ann Arbor	293	318,902	65,385	419,035	54,846	93,520	10,840	255,507	17,829	433,918	103.55	—14,883	26,200	—41,083	—73,502
Arizona Eastern	377	565,263	94,683	709,586	108,855	83,530	5,116	161,163	30,692	400,113	56.39	209,573	35,541	273,903	—125,341
Atlanta, Birmingham & Atlantic	639	515,479	108,896	676,585	128,780	145,283	21,753	320,070	23,267	639,279	94.49	37,306	31,400	5,828	—90,803
Atlanta & West Point	93	158,322	132,436	331,779	35,592	56,225	7,825	120,976	9,872	236,191	71.19	95,588	15,200	80,388	19,096
Atlantic & St. Lawrence	166	232,696	40,223	298,861	86,124	74,512	7,393	321,990	12,560	502,579	168.16	—203,718	22,692	—226,410	—191,641
Atlantic City	170	154,409	139,868	315,566	55,793	86,922	3,607	231,834	2,250	380,598	121.61	—65,032	22,600	—87,632	—46,122
Atlantic Coast Line	4,786	5,389,068	2,594,849	8,570,977	839,760	1,320,383	120,325	3,334,960	180,849	5,835,430	69.08	2,735,547	320,000	2,414,498	—292,224
Baltimore, Ohio Chic. Term	79	.....	784	163,461	74,913	68,415	1,746	184,761	21,209	354,191	217.68	—190,730	41,774	—232,504	—137,137
Baltimore, Chesapeake & Atlantic	87	28,871	9,213	41,758	11,856	24,212	2,674	67,712	4,894	111,349	266.41	—69,591	4,754	—74,345	45,683
Bangor & Aroostook	632	469,003	114,363	614,893	138,531	124,080	7,320	310,448	23,106	611,646	99.47	3,247	35,470	—32,234	—237,336
Belt Ry. Co. of Chicago	31	.....	.....	418,716	69,879	100,266	896	331,475	16,259	518,176	123.75	—100,059	27,040	—127,099	—175,175
Bessemer & Lake Erie	208	911,876	55,878	1,024,820	133,128	522,984	19,526	586,555	43,110	1,233,885	120.40	—209,065	42,966	—252,033	—228,808
Bingham & Garfield	36	445,496	8,976	470,968	72,767	76,522	2,982	96,590	8,744	264,319	56.12	206,649	19,130	187,519	—59,150
Birmingham Southern	44	176,995	2,799	223,459	28,652	57,835	1,742	113,084	8,189	209,500	93.75	13,959	7,185	6,774	—8,369
Boston & Maine	2,305	4,688,435	2,435,658	8,047,965	1,131,205	1,673,372	68,623	5,558,283	256,699	8,745,956	108.67	—697,992	347,799	—1,045,790	—2,105,133
Buff. Roch. & Pitt	584	1,912,660	198,929	2,180,772	305,168	830,340	30,702	1,082,826	62,320	2,314,852	106.15	—134,079	51,227	—185,391	—474,367
Buffalo & Susquehanna R. R. Corp	252	376,253	11,349	393,071	52,104	92,882	3,214	159,051	14,432	321,683	81.84	71,368	8,200	63,188	—2,276
Can. Pac. Lines in Me	233	380,207	46,532	456,489	80,846	102,361	8,816	367,180	5,279	564,480	123.66	—107,991	19,000	—126,991	—300,750
Carolina, Clinchfield & O	282	585,144	54,540	649,696	67,236	126,604	28,591	200,181	26,920	449,115	69.13	200,581	29,600	170,981	—85,294
Carolina, Clinchfield & O. of S. C	18	29.965	3,968	34,883	3,968	280	4,504	9,740	1,794	20,288	58.16	14,595	2,000	12,590	—3,023
Central of Georgia	1,918	2,075,229	796,723	3,187,192	417,341	511,929	73,801	1,110,820	87,380	2,202,406	69.10	984,786	129,545	854,836	361,923
Cent. of N. J	684	3,505,880	975,663	5,072,246	486,196	1,271,726	48,556	2,852,145	139,365	4,828,639	95.20	243,607	317,774	—76,221	—1,241,818
Cent. of New Eng	301	654,461	48,522	746,516	117,561	122,755	2,407	425,966	15,331	686,183	91.91	60,333	34,200	26,114	—140,820
Central of Vermont	411	404,687	115,128	583,594	89,963	145,546	16,177	473,175	22,221	751,595	128.79	—168,001	34,800	—202,939	—223,479
Charleston & Western Carolina	342	304,360	93,323	419,668	54,479	50,647	8,944	187,446	9,908	311,424	74.21	108,245	18,000	90,192	15,176
Chesapeake & Ohio Lines	2,478	5,996,134	1,237,039	7,776,571	1,051,590	1,943,062	98,143	3,516,187	195,680	6,849,629	88.08	926,942	290,000	636,416	—1,404,419
Chicago & Alton	1,052	1,792,587	666,876	2,670,001	415,803	780,833	63,952	1,409,988	71,768	2,766,886	103.63	—96,885	108,389	—205,776	—877,486
Chgo., Det. & Can. Grd. Trk. Jct	60	102,470	23,509	161,152	18,396	39,266	3,185	134,739	4,553	200,139	124.19	—38,987	6,690	—45,782	—63,068
Chicago & Eastern Ill	1,131	2,164,201	491,858	2,926,210	401,542	1,150,947	45,275	1,510,730	90,613	3,213,082	109.80	—286,672	161,765	—449,085	—958,104
Chicago & Erie	269	884,929	82,972	1,105,983	489,274	238,437	30,802	797,955	36,606	1,597,685	144.46	—491,702	73,217	—564,919	—12,346
Chicago & Northwestern	8,094	8,863,148	3,545,702	13,879,154	2,466,240	3,360,999	221,157	7,918,596	383,988	14,452,938	104.14	—573,784	840,000	—1,421,495	—3,934,821
Chicago, Burl. & Quincy	9,373	12,657,631	3,718,894	18,018,970	1,810,479	3,849,396	243,586	8,021,923	510,252	14,652,588	81.32	3,366,382	947,659	2,418,723	—3,352,516
Chicago Great Western	1,496	1,621,136	612,672	2,449,640	306,826	572,325	86,324	1,239,946	78,074	2,307,714	94.21	141,926	115,254	25,987	—370,118
Chicago, Ind. & Lou	654	762,608	258,519	1,138,757	160,747	348,376	33,440	603,841	42,874	1,190,534	105.55	—51,776	63,127	—115,163	—420,318
Chicago Junction	12	.....	.....	424,685	119,329	55,402	2,952	328,713	14,916	570,703	134.38	—146,018	5,552	—151,570	—156,201
Chgo., Mil. & St. Paul	10,305	10,195,829	2,820,029	14,815,285	1,799,244	4,223,498	245,054	8,737,086	423,064	15,372,877	103.76	—557,592	1,032,702	—1,592,235	—3,101,362
Chgo., Peoria & St. L	247	228,122	40,099	282,342	41,664	96,469	11,032	175,333	14,341	338,839	120.01	—56,496	13,500	—69,996	—125,602
Chicago, Rock Island & Gulf	474	486,228	163,667	692,664	67,022	109,137	17,270	245,617	19,657	461,093	66.57	231,572	26,310	205,196	43,471
Chicago, Rock Island & Pacific	7,823	8,152,285	3,597,590	12,771,195	1,668,271	3,023,639	262,929	6,325,609	390,586	11,727,655	99.63	1,043,540	711,766	330,520	—1,641,158
Chicago, St. Paul, Minn. & Omaha	1,749	2,184,627	842,296	3,277,893	244,034	608,834	52,432	1,963,248	91,761	2,985,981	91.09	291,912	189,611	101,331	—334,785
Chicago, Terre Haute & Southeastern	374	463,553	36,130	515,272	75,700	195,330	6,189	275,009	18,857	578,967	113.36	—63,696	25,000	—88,923	—236,170
Cin., Ind. & Western	321	346,494	76,252	466,293	41,612	94,888	12,989	226,270	17,935	394,162	84.53	72,132	18,463	53,669	—56,411
Cin., New Orleans & Tex. Pacific	337	1,008,012	490,138	1,675,977	160,129	523,712	46,902	798,154	44,211	1,585,064	94.58	90,913	77,847	12,893	—489,177
Cincinnati Northern	245	276,119	24,608	309,231	56,143	98,318	5,508	143,409	7,079	310,404	100.38	—1,174	15,133	—16,311	—73,525
Cleveland, Cin., Chic. & St. Louis	2,387	5,321,283	1,605,635	7,631,878	845,956	1,712,238	147,051	3,970,674	175,691	6,903,973	90.46	727,905	344,893	382,101	—718,233
Coal & Coke	197	138,503	38,271	187,655	33,209	63,315	2,784	99,122	7,744	206,674	110.14	—19,019	10,000	—29,019	—48,974
Colo. Midland	337	207,498	25,038	247,488	42,004	51,028	13,635	171,726	9,799	289,778	117.09	—42,350	13,728	—56,078	*
Colorado & Southern	1,103	1,451,204	308,372	1,896,479	143,501	345,634	17,449	688,935	61,562	1,267,891	66.85	628,587	90,000	538,328	—102,291
Colorado & Wyoming	42	54,739	5,121	157,069	12,279	29,500	250	70,755	9,216	121,999	77.67	35,070	10,000	25,062	—56,168
Cripple Creek & Colo. Sprgs	116	125,963	20,631	150,434	12,915	19,405	1,893	53,747	6,870	94,830	63.04	55,604	8,284	47,320	—57,890
Det., Grand Haven & Mil	190	281,000	62,000	411,975	58,052	78,505	9,421	329,594	15,136	490,707	119.11	78,732	6,888	—85,641	—69,465
Delaware & Hudson Co. R. R. Dept	878	3,469,987	383,582	4,071,802	514,340	1,376,787	42,364	2,394,465	173,711	4,533,907	111.35	—462,105	133,280	—595,385	—1,079,327
Delaware, Lack. & Western	955	6,271,569	1,346,106	8,590,197	532,433	1,650,582	130,822	4,285,864	187,830	6,861,692	79.88	1,728,505	469,321	1,258,301	—1,313,877
Denver & Rio Grande	2,557	3,452,119	655,640	4,377,764	380,612	1,075,212	68,502	1,710,315	110,414	3,400,131	77.67	977,632	220,000	755,880	—293,113
Denver & Salt Lake	255	102,697	22,232	135,330	80,079	110,584	2,120	99,919	6,767	299,470	221.29	—164,140	18,000	—182,140	—121,212
Detroit & Mackinac	381	113,697	43,775	172,889	30,543	46,815	5,248	103,002	12,604	198,211	114.65	—25,323	17,078	—42,400	—47,212
Detroit & Toledo Shore Line	80	254,435	.....	255,377	17,646	22,858	3,018	104,133	7,397	155,052	60.71	100,325	19,260	81,065	—70,201
Detroit, Toledo & Ironton	441	167,812	14,701	203,734	61,904	123,506	6,590	233,949	18,373	444,322	218.09	—240,587	17,000	—257,602	—272,622
Duluth & Iron Range	284	142,861	38,366	205,094	126,436	136,601	2,594	208,761	29,728	504,170	245.82	—299,076	13,205	—312,323	—92,334
Duluth, Missabe & Northern	410	180,367	60,642	285,918	207,744	235,990	6,565	264,492	80,213	797,910	279.07	—511,992	21,027	—533,019	—188,531
Duluth, South Shore & Atlantic	601	362,150	131,414	525,420	124,678	101,124	14,290	329,010	16,446	592,376	112.74	—66,956	38,000	—104,956	—169,783
Duluth, Win. & Pacific	175	197,741	51,401	255,993	28,695	47,405	5,508	157,114	11,224	249,927	97.63	6,066	14,211	—8,145	—112,467
East St. L. Connecting R. R.	3	.....	.....	137,075	20,161	16,974	680	127,143	7,356	172,314	125.71	—35,239	3,304	—38,546	—56,716
Elgin, Joliet & Eastern	805	1,641,008	13	1,903,413	433,132	610,034	12,680	1,010,580	56,469	2,122,607	111.52	—219,194	101,546	—320,739	—798,412
Erie	1,989	6,701,468	1,293,118	9,265,760	1,309,890	3,226,260	159,385	5,995,829	282,316	11,054,801	119.31	—1,789,041	434,247	—2,224,020	—2,080,871
Fonda, Johnstown & Glovers. R. R. Co	88	38,252	106,011	154,843	18,501	13,602	977	52,567	12,289	97,936	63.25	56,907	9,000	47,907	—5,222
Ft. Smith & Western R. R. Co	253	150,256	45,737	212,149	29,660	56,126	5,624	83,025	12,433	187,903	88.57	24,246	10,000	14,246	90
Ft. Worth & Denver City	454	840,042	306,276	1,205,917	81,709	239,650	12,086	511,501	37,497	888,188	73.65	317,728	42,269	275,455	—90,010

Traffic News

The Railroad Administration has sent questionnaires to all the railroads asking for detailed information concerning the number of tariffs and tariff supplements issued each year and the cost of their preparation. It is probable that this investigation will lead to the extensive consolidation of individual tariffs into joint tariffs. This policy, for a time at least, will mean an increase in work for the joint tariff committees.

The Railroad Administration is taking cognizance of numerous protests from shippers regarding the abolition of off-line agencies. The traffic division is investigating the question of organizing local offices to handle information and other service formerly performed by outside agencies. J. F. Holden has been specially assigned to this investigation, and the traffic assistants to the regional directors considered the matter at a meeting this week in Washington.

Western Regional Traffic Committees Appointed

Instructions issued by the director general on March 28 provided for the appointment of committees in each railroad region to handle current traffic matters. Accordingly a passenger traffic committee consisting of five men was created recently to handle all passenger matters in western territory; and this committee is directed to appoint, from time to time, such sub-committees as may be necessary to work out detailed matters. A freight traffic committee of five members has also been appointed for the western region with similar instructions. The freight traffic committee consists of A. C. Johnson, of the Chicago & North Western, chairman; S. H. Johnson, of the Chicago, Rock Island & Pacific; J. B. Baird, Northern Pacific; F. B. Houghton, Atchison, Topeka & Santa Fe; Gentray Waldo, Southern Pacific. The passenger traffic committee consists of P. S. Eustis, Chicago, Burlington & Quincy, chairman; A. Hilton, St. Louis-San Francisco; W. J. Black, Atchison, Topeka & Santa Fe; L. M. Allen, Chicago, Rock Island & Pacific, and Chas. S. Fee, Southern Pacific.

Coal Production

The output of bituminous coal increased 366,000 net tons, or 3.4 per cent, during the week ended April 27, compared with the preceding week, according to the weekly bulletin of the United States Geological Survey. Total production, including lignite and coal made into coke, is estimated at 11,230,000 net tons, and the average production per working day at 1,872,000, compared with 1,811,000 the previous week and 1,680,000 in April, 1917. Losses attributed to car shortage amounted to 18.1 per cent during the week ended April 13, as compared with 12½ per cent the preceding week.

The National Coal Association has issued a statement declaring that coal production has been curtailed by inadequate car supply and that interference with the war program will soon be inevitable unless something is done to prevent other traffic crowding coal off the rails. "The mines are not working at top speed nor at a rate even approaching top speed," the statement says, because of insufficiency in the supply of cars at the coal mines and practically no headway has been made to meet the estimated shortage of 50,000,000 to 75,000,000 tons of coal. The statement adds:

"It is understood that the railways are hauling far more traffic as a whole than they ever hauled before. It is evident, therefore, that freight of other classes than coal is responsible for all or practically all of this increase. It would seem that the time has come for the War Industries Board, or whoever is running the war, to decide upon a readjustment of traffic over the eastern railways, so that coal may be handled in sufficient tonnage to take care of the industrial and domestic requirements of the eastern states.

"Unless such readjustment is made very soon there will be inevitable interference with the war program and shortage of domestic fuel in the New England, Atlantic, middle Western and other states throughout the year."

Commission and Court News

Interstate Commerce Commission

The Commission has amended its regulations for the transportation of dangerous articles by express to provide that during the period of the war shipments of dangerous articles other than explosives as defined in the regulations, to or from the War or Navy Departments or recognized offices thereof, may be transported when packed, including requirements as to weight and quantity, in a manner approved by the department.

Eugene Morris, agent for the lines in Central Freight Association territory, has filed a fifteenth section application with the commission proposing the establishment of diversion and reconsignment rules to provide for a charge of two dollars a car for stopping freight in transit for orders for the purpose of delivery, reconsignment, diversion or reforwarding, and also charges ranging from $2 to $5 a car for diversion or reconsignment before the arrival of the car at the first billed destination. These rules are to apply on green fruit, vegetables, berries, melons and grapes, both within Central Freight Association territory and interterritorially.

The Commission has issued an order to protect shippers whose consignments may be diverted by a railroad by providing that in instances in which, under the director general's order No. 1, shipments have been or are consigned by routes over which the rates are higher than over the routes designated by the shipper, or over routes not provided for in through rate schedules, carriers participating in such transportation are authorized to adjust the charges to the basis of those applicable by the route designated by the shipper or of those applicable by the route by which the freight would ordinarily have been sent. The director general's order No. 1 requires that existing schedules of rates and outstanding orders of the commission are to be observed; that through routes which have not heretofore been established because of short hauling or other causes are to be established and used whenever expedition and efficiency of transportation will thereby be promoted, and that for this purpose the designation of routes by shippers is to be disregarded.

The commission has amended the diversion and reconsignment rules prescribed in its fifteenth section order of March 26, as follows: Paragraph B, page 2, and paragraph A, page 6, are changed to read: "Orders for diversion or reconsignment will not be accepted under these rules at or to a station or to a point of delivery against which an embargo is in force. Shipments made under authorized permits are not subject to this condition." Eastern trunk line and New England carriers which have lawfully on file with the commission terminal tariffs providing specific rules governing at eastern seaboard terminal points, are authorized to add an exception, to the effect that the rules will not apply to freight at Boston, New York, Philadelphia and Baltimore, for which other tariffs are provided. (Reference to be made to such tariffs.) The rules and charges governing grain, seed (field), seed (grass), hay or straw, carloads, held in cars on track for the privilege of national, state, board of trade or other official inspection at billed destination or points intermediate thereto, set forth on pages 5 and 6 of the order of March 26, 1918, are postponed until further order.

Court News

Suspension of Proposed Tariff

The New Mexico Supreme Court holds that neither by the State Constitution nor by statute is the state corporation commission given the power to suspend a proposed tariff, and the law does not cast upon a railroad the burden of justifying a proposed rate. The commission cannot cast this burden upon the carrier by serving it with an order to show cause why a given rate should not be established. In re Coal Rates in New Mexico (N. Mex.), 171 Pac., 506. Decided February 16, 1918.

Injuries from Cinders from Engines

The Texas Court of Civil Appeals holds that one into whose eye a hot cinder is thrown by an engine 174 feet distant has the burden of proving negligence. No spark arrester that will permit a reasonable use of a locomotive will prevent the emission of cinders of the small size shown to have entered the plaintiff's eye. The rule of burden of proof in case of fires resulting from sparks escaping from engines will not be extended to cases of this kind. —Missouri, K. & T. v. Langford (Tex.), 201 S. W., 1087. Decided March 13, 1918.

Assumption of Risk by Roundhouse Employee

The Texas Court of Civil Appeals holds that a roundhouse helper who had worked for over two years about engines and a turntable which was always lighted the same way, the lever handle of which had always been the same length, and the electrical turner had for months been in the same condition, all of which he knew, assumed the risk of injury from such conditions, and it was error to charge that he could recover if the master was negligent.—Ft. Worth & Denver City v. Miller (Tex.), 201 S. W., 1049. Decided March 23, 1918.

Demurrage—Ownership of Private Tracks

As the prompt movement of cars is necessary to carry on the business of carriers, as well as to prevent discrimination among shippers, the Federal District Court for the Western District of Pennsylvania holds that a carrier may impose demurrage charges on privately owned tank cars used in its business. A railroad's tariffs provided for demurrage and storage charges on shipments of explosives, c. l. and l. c. l. Under an agreement with a shipper, the railroad laid a side track partly on its property and partly on the shippers, the contract providing that the railroad should have the right to use, without cost, any part of the siding in connection with other business, provided such use did not interfere with the shipper's business. Privately-owned tank cars were held by the shipper on the siding for longer than the free time. It is held that, as the purpose of the law is to prevent discrimination, the railroad was entitled to charge demurrage on such tank cars, though they stood on a track partly owned by the shipper.

Under the tariff, carload shipments of dangerous articles were subject to both demurrage and storage charges. Less charges were prescribed for the storage of less dangerous and relatively safe explosives, c. l. and l. c. l. It is held that, under these rules, the railroad could, where gasoline was stored in tank cars on sidings, collect both demurrage charges and storage.—Pittsburgh, C. C. & St. L., 247 Fed., 573.

Liability for Fires—Proof of Cause

By Arkansas Acts, 1907, p. 336, §1, a railroad company is liable for the destruction of or injury to any property which may be caused by fire or result from any locomotive, engine, machine, train, car or other thing used on such railroad, or in the operation thereof, or which may result from or be caused by any employee, agent or servant of such company upon or in the operation of the railroad. The Arkansas Supreme Court holds that under this section a railroad company, while absolutely liable, not only for fires set out by its locomotives and machinery, but for fires set out by its employees while engaged in cleaning or repairing the roadbed or right of way, is not absolutely liable for fires which may have spread on the railroad right of way, and which its servants have failed to extinguish, or which may have been lighted thereon by other persons, and which the railroad employees have not restrained or extinguished, and in such case proof of negligence is essential to recovery. In an action for the destruction of the plaintiff's property along the right of way, evidence of a forest fire in the vicinity which might have caused the destruction of the property is admissible. In such an action, where there was evidence that the fire might have resulted from some cause other than the negligence of the railroad company, an instruction that the verdict should be for the railroad company if the probabilities were equal that the fire might have resulted from causes for which the company was not liable was held proper. Judgment for the railroad was affirmed.—Clark v. St. Louis, I. M. & S. (Ark.). Decided February 4, 1918.

Equipment and Supplies

1,025 Locomotives and 95,000 Cars Ordered by Government

The Railroad Administration announced on Tuesday the placing of orders for 1,025 locomotives, 555 to the American Locomotive Company and 470 to the Baldwin Locomotive Works. These locomotives will be built to the standard designs recently evolved by the committee of builders and railroad experts, there being six types, each of a heavy and light design. The total cost of the orders is approximately $60,000,000.

Under the terms of the contracts between the government and the two locomotive builders actual construction must begin at once. Deliveries are promised to begin in July and continue monthly during the remainder of the year, the locomotives being allotted on completion to the railroads where they are most needed. The locomotives will all be lettered with the initials U. S.

The Lima Locomotive Works was not given any of the first orders because it is now working to capacity.

The locomotives will require 200,000 tons of steel, including 100,000 tons of plates. The prices range from approximately $35,000 for the switching locomotives to $90,000 for the heavy Mallet locomotives.

The locomotive builders are to be paid 5 per cent of the estimated cost of manufacture if the cost does not exceed the estimates. If the cost is less than the estimates the difference is to be equally divided between the builders and the government. The locomotive appliances to be used and the basis of profit thereon have not yet been decided.

In announcing the order the Railroad Administration made the following statement:

"The awarding of this contract marks the establishment by the government of the standardized type of locomotives, specifications for which have been developed and perfected by committees of experts, who, for many weeks, have devoted time and study to the subject.

"The six standard types of locomotives, two sizes of each class, are expected eventually to supersede the many miscellaneous types and varieties of locomotives in service, embracing engines built according to 500 or more varying specifications. This is the first time that any real forward steps have been taken looking to the wide standardization of locomotive engines."

It is understood that the 555 locomotives ordered from the American Locomotive Company will be supplemented by another order in about 60 days for 145 locomotives, also for 1918 delivery, making a total of 700 locomotives. The first 555 are understood to include approximately the following types:

20	Mallet (2-8-8-2).
35	Heavy Santa Fe.
150	Light Santa Fe.
100	Heavy Mikado.
200	Light Mikado.
50	Six-wheel switching.
555	

This distribution as to types, however, has not been given out officially and, in fact, may not be definitely determined.

Bids for Appliances and Specialties

The letter sent by the Central Advisory Purchasing committee to manufacturers regarding proposals to furnish appliances for the locomotives enclosed information which the committee believed sufficient on which to base an intelligent bid. If any further details were desired they might be obtained by an inspection of the drawings of the locomotives at the office of the committee. It was stated that no bid would be considered unless the device offered was interchangeable in its application with similar devices offered by other manufacturers, that the prices named should cover delivery of the articles at the different locomotive works and that the bids should include a detailed analysis of the prices asked, showing kinds and quantity of material, with unit prices, cost of productive labor, overhead expenses, royalties, if any, freight charges, margin of profit and total price. Op-

portunity was offered to include a quantity factor if desired; that is, one price for equipment for 100 locomotives or less and another price for 200 locomotives or more. Manufacturers were also requested to state definitely their productive capacity and at what rate per week or per month they could guarantee delivery. If they were prepared to give any guarantee under bond as to length of service, cost of maintenance, or efficiency, of the device, it was stated that this should form part of the proposal.

95,500 Cars Ordered

The United States Railroad Administration has placed the following orders for cars:

American Car & Foundry Company	30,000
Canadian Car & Foundry Company	7,500
Standard Steel Car Company	13,500
Pressed Steel Car Company	13,500
Pullman Company	7,500
Haskell & Barker Car Company	7,500
Bettendorf Company	3,000
Liberty Car & Foundry Company	1,000
St. Louis Car Company	1,000
Cambria Steel Company	3,000
Ralston Steel Car Company	3,000
Pacific Car & Foundry Company	3,000
Mt. Vernon Car Manufacturing Company	2,000

The builders, like the locomotive builders, are to be paid 5 per cent of the estimated cost of manufacturing these cars if the cost does not exceed the estimates. If the cost is less than the estimates the difference is to be equally divided by the builders and the government. It is understood that this basis was proposed by the American Car & Foundry Company and accepted by the other builders.

The car and locomotive specialties to be used and the basis of profit specialty people will be given have not yet been decided on.

Thhe mechanical committee and Frank McManamy, manager to the locomotive section, met Tuesday and Wednesday to decide on the locomotive specialties and some further details as to specifications. They were to have taken up the car specialties similarly on Thursday.

Priority

The Railroad Administration is working with the War Industries Board with a view to securing priority in all materials, and the builders have been given opportunity to arrange for some materials in advance. The government does not expect to actually purchase any of the materials, but it will co-operate. Any maximum prices on raw material fixed by the government will prevail. The question of financing the builders has not yet arisen.

Locomotives

The Lackawanna Steel Company has ordered 2 eight-wheel switching locomotives from the American Locomotive Company.

The Cambria & Indiana has ordered 2 Mikado locomotives from the Baldwin Locomotive Works.

Freight Cars

The General Chemical Company, New York, is inquiring for 10 to 25 wood lined tank cars.

The Midwest Iron Company, Kansas City, Mo., is inquiring for 25 to 50, 40-ton, 8,000-gal. tank cars.

The Certain-Teed Products Corporation, St. Louis, is inquiring for 5, 50-ton, 10,000-gal. tank cars.

The King Chemical Company, New York, is inquiring for 3 to 5 sulphuric acid, 50-ton, 7,000-gal. tank cars.

The American Steel Company has ordered 50, 60-ton, steel hopper cars from the Pressed Steel Car Company.

The Chicago, Milwaukee & St. Paul, which has been contemplating the construction of 2,500 box and 2,500 coal cars, has failed to negotiate the sale of equipment trust certificates to cover their cost, according to a recent statement by President H. E. Byram. It will therefore be necessary for the government to provide the funds, but thus far arrangements have not been completed with the Railroad Administration for this purpose.

Supply Trade News

The Ogle Construction Company, Chicago, announces that after April 20 it will be located at 1504 Steger building, 28 East Jackson boulevard.

The Sprague Electric Works of the General Electric Company announces the removal of its Boston office from 201 Devonshire street to 84 State street.

Albert Tate Smith, lately manager of the R. U. V. Company, 50 Broad street, New York, has returned to the Permutit Company, with which he was formerly connected, to take the position of assistant manager of sales.

McCord & Co., Chicago, have purchased several parcels of property in the vicinity of 112th and Green streets, Chicago. The property is adjacent to the company's present plant and will be used for future extensions.

Fred H. Jones has been appointed resident manager for the General Railway Signal Company in charge of its eastern territory, whose offices are located at 30 Church street, New York. Mr. Jones has been connected with the General Railway Signal Company since the time of its organization in 1904. During this period of 14 years, he has occupied a number of important positions with the company including that of assistant resident manager of the Chicago office and resident manager of the San Francisco office. Mr. Jones assumed his new duties as Resident Manager of the New York office on May 1.

W. S. Henry, acting resident manager of the General Railway Signal Company at New York, has been appointed service engineer of the recently created service department at Rochester, N. Y., effective May 1. He has been connected with the company since the organization of the Taylor Signal Company in 1900. In September, 1900, he served as superintendent of construction, with headquarters at New York. In 1904, when the Taylor Signal Company was consolidated with the Pneumatic Signal Company, forming the General Railway Signal Company, Mr. Henry was transferred to the engineering department at Buffalo. In April, 1905, he went to the Lehigh Valley as assistant signal engineer, resigning in August of that year to return to the General Railway Signal Company as assistant engineer on the engineering work of the New York Central electric zone signaling. Later he was transferred to New York City as resident engineer on the same installation, and in July, 1907, returned to the engineering department as development engineer, in connection with circuit and apparatus design. After serving a year and a half in this capacity he was promoted to the position of principal assistant engineer, which position he held until his appointment as acting resident manager in charge of the New York office.

W. S. Henry

Frank Hopewell, head of the firm of L. C. Chase & Co., Boston, Mass., died April 25, at the age of 61. Mr. Hopewell was born in Shelburne Falls, Mass., in 1857. His father, a native of London, England, came to the United States at the age of 14 and settled in Springfield, Mass., where his son, Frank, graduated from the Springfield High School in 1875 and the Springfield Collegiate Institute in 1879. In 1881, Frank Hopewell became associated with L. C. Chase & Co., of Boston, selling

agents for Sanford Mills, Troy Blanket Mills, Reading Rubber Manufacturing Company, and Holyoke Plush Company, becoming a partner in 1887. He became treasurer of Sanford Mills in 1896, holding this office until 1915.

Independent Pneumatic Tool Company

A re-organization has been effected of the Independent Pneumatic Tool Company, a New Jersey corporation, and the Aurora Automatic Machinery Company, which is incorporated in Delaware. Both companies were owned by the same interests, the Independent Pneumatic Tool Company representing the selling division for the Thor pneumatic and electric tools, and the Aurora Automatic Machinery Company being the manufacturing department. The latter company also manufacturers and sells Thor motorcycles and gasoline engines.

The combining of the two Companies under one corporate name is for convenience in handling business.

Under the re-organization plans the Company is known as the Independent Pneumatic Tool Company, incorporated in Delaware for $3,000,000. Ten directors will serve on the board as follows: John P. Hopkins, former mayor of Chicago, chairman; John D. Hurley, James J. McCarthy, William A. Libkeman, Leonard S. Florsheim, Edward G. Gustafson, Robert T. Scott, Ralph S. Cooper, August Gatzert and Fletcher W. Buchanan.

The officers are John D. Hurley, president; Ralph S. Cooper, vice-president; Fletcher W. Buchanan, secretary and Edward G. Gustafson, treasurer.

The general offices of the company are in the Thor building, at 1307 South Michigan Boulevard, Chicago.

Trade Publications

RED CROSS CIRCULAR.—E. S. Jackman & Co., Chicago agents for the Firth-Sterling Steel Co., are sending out an attractive folder prepared by Edwin S. Jackman in the interests of the American Red Cross.

SMALL TOOLS.—The small tools department of the Pratt & Whitney Company, Hartford, Conn., has issued catalogue No. 9 covering the taps, dies, milling cutters, reamers, punches, drills, etc., manufactured by that company. The catalogue has 315 pages, 4½ in. by 7½ in. and in the miscellaneous section in the back there are several valuable tables.

DRIVING BOX LUBRICATION.—The Franklin Railway Supply Company, Inc., New York, has issued bulletin No. 500 describing the Franklin automatic driving box lubricator. Instructions are given for applying the lubricator, also for its proper inspection and care, and in connection with the lubricator, a special method of grooving the brasses is described and recommended.

CABLE-WAY CARRIAGES.—The Blaw-Knox Company, Pittsburgh, Pa. has issued a folder describing its automatic single-rope cable-way carriage, designed for the operation of the Blaw single-line clam-shell buckets on overhead cables. The folder is illustrated with four views showing various steps in the operation of the bucket by means of the carriage.

INDUSTRIAL LIGHTING.—The importance of proper lighting as an aid in securing the maximum production in the shops is well brought out in a booklet published by the Cooper-Hewitt Electric Co., Hoboken, N. J., under the title, "Lighting for Production and Safety." The intensity of illumination, system to be used, character of light source and units, are discussed and the application of the principles set forth is illustrated by several drawings showing typical lighting arrangements as installed in various manufacturing plants.

ELECTRIC WELDING.—A 6-in. by 9-in., 45-page manual entitled "Electric Welding" has been issued by the Wilson Welder & Metals Company, Inc., New York. This manual provides instructions covering the installation, care, operation and maintenance of Wilson electric welding equipment. Also, directions are given regarding the welding of various kinds of metal, the grade of welding wire to be used, the amount of current to employ, etc. Some interesting illustrations are given of the broken cylinders on the converted German steamships which were successfully repaired by the electric welding process.

Financial and Construction

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—At the annual meeting of the stockholders of the Atchison, Topeka & Santa Fe at Topeka, Kan., on April 25, Dewitt Cuyler of Philadelphia and Augustus Juillard of New York were elected directors. D. L. Gallup, controller, New York, was elected a director to succeed Carl R. Gray, who resigned recently to become an assistant to the director general of railroads at Washington.

CHICAGO, MILWAUKEE & ST. PAUL.—The directors at the monthly meeting on April 25 again postponed action on the dividends. H. E. Byram, president, said that nothing would be done in connection with the semi-annual payments until after the contract between the Government had been signed, an operation which he hoped would be completed before the annual meeting next month.

MARSHALL & EAST TEXAS.—Through the action of W. G. McAdoo, director general of railroads, the Marshall & East Texas will not be junked. The owners of the property have been seeking for some time to abandon that part of the road running between Marshall and Winnsboro, a distance of 74 miles, and to dispose of the rails. Court proceedings prevented the plan from being carried out and it has been effectively stopped by order of Mr. McAdoo, who has taken over the line on behalf of the Federal Government. Provision for a resumption of train service over the division has not yet been made.

NATIONAL RAILWAYS OF MEXICO.—The directors for the ensuing year were elected at the annual meeting at Mexico City, on April 24. Constituting the board of directors in Mexico: Carlos Basave y del Castillo N., Elias S. A. de Lima, Aquiles Elorduy, General Pablo Gonzalez, Fernando Gonzalez Roa, Thomas P. Honey, Mario Mendez, Rafael Nieto, Alberto J. Pani, Francisco Puga, Ignacio S. Rodriguez and General Jacinto B. Trevino. Constituting the New York Local Board: Henry Bruere, Justo Acevedo, Alfredo Caturegli, Adolfo de la Huerto, J. J. Hanauer, J. Hirschman, L. F. Loree, W. T. Rosen and H. H. Wehrhane.

NEW YORK CENTRAL.—Holders of the $10,000,000 one-year 5 per cent notes of the New York Central, maturing on May 1, were paid off with funds obtained by that company from the government. An interesting phase of the New York Central financing growing out of government operation was that the company borrowed $13,000,000 from the government. That amount, together with cash on hand, enabled the New York Central to pay off the $10,000,000 notes and meet $9,000,000 quarterly interest and dividend payments now due. This is the first case known where the government has advanced a railroad money to make good the guarantee that annual income so long as the war lasts shall be as large as the average for the three years ended June 30, 1917.

Railway Construction

CANADIAN GOVERNMENT RAILWAYS.—Bids were received recently for carrying out improvements at Halifax, N. S., to include a temporary station, mail, baggage, express and commissariat building, car repair building, two transit sheds, subway and water and sewer systems. The cost of the work will be about $700,000.

CHICAGO, BURLINGTON & QUINCY.—This company is building a second track between Crawford, Neb., and Rutland, six miles. The contract for the grading has been awarded to Sprague & Neisly. The tracklaying will be done by the railroad forces.

This road has ordered from the American Bridge Company, steel for 5 turntables of the following lengths: Eola, Ill., 100 ft.; Edgemont, S. Dak., 100 ft.; Bridgeport, Neb., 100 ft.; Seneca, Neb., 100 ft.; Denver, Colo., 100 ft. The last-mentioned is for the Colorado & Southern.

Canadian Pacific Railway Company

Annual Meeting of Shareholders, May 1, 1918

ADDRESS OF

THE RT. HON. LORD SHAUGHNESSY, K.C.V.O., *Chairman*

Compared with the returns for the calendar year 1916 the Thirty-seventh Annual Report of the Directors now before you for consideration and approval shows an increase in gross revenue from transportation of $12,660,000, but this amount was more than absorbed by the working expenses, which increased $16,590,000, so that the net income from transportation in 1917 was less by $3,930,000 than it was in the previous calendar year.

Notwithstanding the larger volume of traffic in 1917, it will be gathered from the statistics incorporated in the Report that there was a substantial decrease in traffic train mileage and loaded car mileage, indicating still further improvement in operating efficiency. In normal times this should be reflected in the working expenses, but its effect was minimized by the higher scale of wages and the enhanced cost of fuel and other materials required for the maintenance and operation of the railway that prevailed during the year and that added $15,250,000 to the operating expenses.

These conditions were not exceptional in the case of your Company, but applied in a proportionate degree to all the other Canadian carriers.

In view of the abnormal and constantly increasing cost of railway operation, the Board of Railway Commissioners, after due deliberation, authorized an increase of ten to fifteen per cent. in specified zones in the tariff of charges for the carriage of passengers and freight. This concession to the Railway Companies to assist them in meeting, in part, the increased cost of the transportation services that they are providing is very moderate indeed when compared with the increased prices due to similar causes which the public has to pay for all other commodities. It was clear that without higher rates many of the Railway Companies would be compelled to face large deficits, and in so far as it applied to these lines, some of them being wards of the Government, the order of the Board appeared to arouse little objection or criticism. But certain trade bodies and others appealed to the Dominion Government for the disallowance of the Order of the Board of Railway Commissioners on the ground that the additional revenue resulting from the higher rates would, in the case of the Canadian Pacific Railway Company, have the effect of supplementing that Company's substantial surplus income after the payment of fixed charges and dividends.

To enable the weaker Companies to reap the benefit of the higher rates, and at the same time to meet the objections that had been urged to the participation of the Canadian Pacific in like benefits, the Government decided to permit the advance in rates for the carriage of traffic authorized by the Board of Railway Commissioners to become effective March 15th, 1918, but concurrent with this decision there was an Order of the Governor-General in Council under the War Measures Act, substantially as follows:—

1. The Canadian Pacific Railway Company, hereinafter called "the Company," shall pay to the Government of Canada the following special taxes:

1st.—One half of its net earnings from railway operation in excess of seven per cent. on its Common Stock (after paying fixed charges, appropriation for Pension Fund, and dividends on Preferred Stock).

2nd.—Income tax on the Company's special income (inclusive of all the Company's income, except earnings from railway operations), under the provisions of The Income War Tax Act, 1917, or any amendment thereof hereafter enacted.

Provided that the total amount to be paid each year by the Company shall not be less than—

(1) The Company's net earnings in such year from railway operations, and from special income as defined above, in excess of 10% on its Common Stock (after paying fixed charges, appropriation for Pension Fund and dividends on Preferred Stock), up to $7,000,000, or

(2) The amount by which its net earnings from railway operations exceed the net earnings from railway operations for the fiscal year ended December 31st, 1917, due to the increase in freight and passenger rates granted by the Order of the Board of Railway Commissioners, dated 26th December, 1917.

3. Payment in full of special taxes under this order shall in respect of earnings from and after January 1st, 1918, relieve the Company of liability under the Business Profits War Tax Act, 1916, and any other Dominion Act of like nature hereafter enacted, and (save as hereinbefore provided) under the Income War Tax Act, 1917.

4. This order shall be deemed to have come into force and effect on the first day of January, 1918, and to continue in force and effect during the present war, and until further ordered.

Briefly stated, this Order-in-Council not only deprives your Company of any improved revenue that might result from the higher tariff, but imposes upon it a measure of taxation discriminatory in character, and therefore your Company might with propriety question its fairness or justification. A state of war, with its enormous demands upon the National Treasury, and other financial burdens brought upon the Country by an unfortunate railway policy, coupled with the thriving condition of your Company's affairs, were in all probability taken as furnishing reasonable warrant for the Government's action.

Since the outbreak of war your Company has deemed it a duty to render to Canada and the Allies all the practical and financial assistance in its power, and while it is not possible with constantly changing conditions to form at this time even an approximate estimate of the tax, the amount, whatever it may be, will be paid without protest or embarrassment to your finances. It must not be assumed that in the adoption of this measure the Government was actuated by any spirit of hostility to the Company. On the contrary, it may be stated without reservation that at no other time has your Company enjoyed the confidence and support of Parliament, the Government and the people to a greater extent than at present. Nor should the Government's action be assumed to forecast a policy in the future that might jeopardize investments in Canadian Government, Municipal, or Corporation Securities.

What is commonly called "Canada's Railway Problem" has, for some months past, occupied a place in the attention of the Canadian people second only to the affairs of war, and expedients designed to lighten the burden imposed on the Public Treasury by the railway situation have been considered and discussed by the Public and the Press.

Not unnaturally your Company has, by reason of its outstanding position in the business affairs of the Country, been brought into the discussion. It was evident that some of the writers and speakers who took part had but imperfect information or were guided by traditional misconception when dealing with the affairs of your Company.

Although more than 90% of its securities are owned abroad, your Company is essentially Canadian in its inception, progress and aspirations, and therefore the Directors feel that it is not out of place at this time to give you, for the information of the Canadian public as well as the investors in the property, a brief review of some salient features of the Company's financial policy and progress leading up to its present stable position.

Under the terms of the contract of October 21st, 1880, between the Government of Canada and the Syndicate acting for the Canadian Pacific Railway Company in anticipation of the Charter, the Government undertook to give, by way of subsidy, to assist the Company in carrying its enterprise to successful completion, certain sections of railway between Lake Superior and Winnipeg and between Savonas and Port Moody in British Columbia then in process of construction under Government auspices, $25,000,000 in cash and 25,000,000 acres of land suitable for settlement. After work had been in progress for two or three years it was found that the cost was substantially in excess of the estimates, and the Company applied to the Government for further temporary aid by way of loans. When, in 1885, the repayment of the loans was being arranged, the Government decided to accept in part payment a return of 6,700,000 acres of the Land Grant in place of $10,000,000 in cash; in effect, therefore, the subsidy consisted of $35,000,000 in money, 18,300,000 acres of land, and the sections of railway in process of construction by the Government to which reference has already been made.

At the outset the Company had expected to raise the requisite funds for the execution of the work by sales in the English market of Capital Stock and of Bonds secured by the Land Grant, thus keeping the railway property free from bonded debt, but it soon became manifest that this was impossible, and, therefore, Parliament was asked to authorize and did authorize the issue of $35,000,000 5% First Mortgage Bonds and $65,000,000 Ordinary Share Capital. Despite a determined effort on the part of the Directors to give confidence to investors by depositing in cash with the Government of Canada an amount sufficient to meet a Government guarantee of dividend at the rate of 3% per annum on the Common Stock for ten years, unfriendly influences at home and abroad were so prejudicial in the English, American and Continental markets that the original $65,000,000 only yielded to the Treasury of the Company an average of somewhat less than 46% of its face value. The unwillingness of investors to pay a higher figure for the Stock in those early days need not be considered extraordinary, however, when we learn that as late as 1895, when the railway had been completed and in operation for more than nine years, the Stock was offered in the market at as low as 33% with but few takers.

In 1885 the President of the Company, now Lord Mount Stephen, induced Baring Brothers to find purchasers for the $35,000,000 First Mortgage Bonds, and by this means the Company was enabled to repay the loans from Government and to meet its floating debt.

It was evident that the main line described in the Agreement, serving as it did thousands of miles of territory almost uninhabited, could not be kept going unless it was brought into touch with the more important commercial centres of Eastern Canada and was provided with branch lines and connections that would contribute traffic to its rails, and, therefore, arrangements were made to reach Montreal, Ottawa, Toronto, and at later stages Quebec, Hamilton, the more important manufacturing towns in Ontario and Quebec, and the Winter port at St. John, N. B., and connections were established at various points along the frontier from the Atlantic to the Pacific with railway systems in the United States. These extensions, feeders and connections were obtained by agreements with a number of Canadian Companies for the acquisition or lease of their properties, the consideration in most cases being a guarantee of interest on their securities by way of rental, and in other cases the Company's credit was utilized for the construction of new lines. In circumstances when the interchange of traffic was a matter of prime importance, the connecting lines in Canada were only built to the International Boundary after the Company had taken the requisite steps to ensure the observance of traffic agreements by the railway lines on the other side of the International Boundary.

Inevitably this policy would lead to a variety of securities in the shape of Bonds assumed by the Company with reference to acquired properties or created and issued to furnish money for construction of new lines, each series secured by a mortgage on the particular property to which it applied.

In order to avoid this undesirable situation the Company decided, with the consent of Parliament, to utilize Consolidated Debenture Stock for the purchase or conversion of existing Bonds, and to provide funds for building or acquiring such additional mileage as might appear to be required from time to time for the advantage of the Country and the Company. This Consolidated Debenture Stock is perpetual and irredeemable, differing from a mortgage bond in that it gives no right of foreclosure in the event of default. The holders have a first claim on the revenues of the Company for their semi-annual dividends after the working expenses and taxes or fines have been paid, and the contract demands of existing bond-holders have been satisfied. If by any chance the Company failed to pay, within a fixed period, the dividend accrued on the Consolidated Debenture Stock the holders of that Stock would become the Shareholders of the Company and would control its affairs until the default was made good, when the property would automatically pass back to the Preference and Ordinary Shareholders.

In the early period of its history the Company was beset by many difficulties and disappointments, but on the whole its progress was not unsatisfactory.

In 1899 the Company had 7,000 miles of railway; its gross earnings were $29,200,000 and after the payment of working expenses there were net earnings of $12,200,000; the funded debt secured by Mortgage Bonds was $47,200,000: Debenture Stock had been sold to the amount of $54,237,000, and the annual fixed interest charges were $6,800,000; while in 1916 the operated system comprised 13,000 miles, with net earnings of $50,000,000 and an increase of only $3,500,000 in the annual interest charges.

CAPITAL EXPENDITURE

After 1899 the Company's traffic commenced to show considerable growth and the necessity for more rolling stock equipment and for traffic facilities and improvements of every possible description became imperative. Year by

year with the great expansion of business throughout the Country the demand for adequate facilities became more pressing, and the records show that in the years 1902-1914 inclusive, the Company expended for second tracks, reduction of gradients, terminals, freight yards and facilities, work shops, machinery, and improvements of every character chargeable to Capital, $206,300,000, and for cars, locomotives and other equipment $130,000,000. To meet this expenditure of $336,300,000 Debenture Stock could not legally be utilized and Preference Stock could be issued and sold only in limited amounts. In these circumstances the Directors decided to ask the Ordinary Shareholders of the Company to provide funds as these were required from time to time by taking further allotments of Common Stock.

In the thirteen years mentioned the Shareholders were offered and accepted $195,000,000 of Common Stock for which they paid $262,100,000. Out of this $33,750,000 of Canadian Pacific First Mortgage Bonds were paid off and retired, and $26,200,000 was used to pay the cost of railway lines acquired or constructed and of additional steamships with reference to which no Bonds or Debentures were sold. The remaining amount, $202,150,000, was supplemented by the sale of Preference Stock and Equipment Notes that brought in $56,500,000, making a total of $258,650,000 to apply against expenditures of $336,300,000. The further sum necessary, namely, $77,650,000, was provided from the surplus revenue of the Company. Thus the Company was put in a position to deal efficiently and economically with a large and ever-increasing volume of traffic, and at the same time was able to reduce its bonded debt, the requisite money being provided by the owners of the property who were willing to venture their money on Canada's present and future stability. They were encouraged by the annual accounts of the Company which, year by year, showed most gratifying results and gave ample warrant for every statement made by the Directors.

Notwithstanding the low price at which it was necessary to sell the original $65,000,000 of Common Stock, as already explained, the entire $260,000,000 of this Stock outstanding has yielded to the Treasury in cash an average of $112 for each $100 of Stock, and if the additional amount supplied for capital expenditure from the surplus belonging to the Shareholders be taken into account, the Shareholders paid an average of $143 for each $100 of Stock that they hold.

In 1916 the railway system operated directly by the Company and included in the traffic returns had reached 13,000 miles, or 6,000 miles more than in 1899, but the bonded debt had been decreased from $47,200,000 to $3,650,000 and the Consolidated Debenture Stock outstanding was more by $122,000,000. The net revenue from operation had grown from $12,200,000 to $50,000,000 in round figures, while the annual fixed charges were only $3,500,000 more than in 1899. In 1916 the amount available for distribution to Ordinary Shareholders after providing for fixed charges, dividend on Preference Stock, appropriations for Pension Fund, and other purposes, was about $34,000,000, or over 13% on the Common Stock. Of this, 7% was paid to the Shareholders and the balance added to the surplus. In 1917 the mileage operated had increased to 13,400 miles, but the net earnings were less by $3,930,000 although the gross income was larger by $12,660,000, the shrinkage being due to the additional cost of labour, fuel and material of every description.

The progress of the Company has, indeed, been marvellous, and it might readily occur to the casual observer that advantageous terms for the carriage of traffic must have contributed to the result. This is not the case. A reference to the statistics of the Interstate Commerce Commission and to the Annual Reports of the railway companies will show that the average rate per passenger per mile and the average rate per ton per mile, for the carriage of passengers and freight respectively, received by the Canadian Pacific were lower than those received by any combination of railways South of the International Boundary constituting a through route from the Atlantic to the Pacific Ocean.

But it may be asked how it is possible under these conditions for the Canadian Pacific to attain such results when it be taken into account that the rates of pay to employees in every branch of the service are at least as high as, and the cost of its rails, fuel and other material required for the maintenance and operation of its lines is higher than in the case of railway lines in corresponding territory in the United States. The answer is simple. The achievement may be attributed primarily to the policy pursued for so many years of keeping down the annual fixed interest charges while extending its rails into new productive territory as opportunity offered, and improving the standard and efficiency of its property as revenue warranted: but the economies naturally attending the long haul of traffic over its own rails to its own terminals with none of the heavy tolls for handling, switching and kindred services at common points of junction that other companies are required to bear, the opportunity to make the maximum use of its own equipment with the consequent saving in the cost of car hire, and the lesser amount required for general and traffic expenses as compared with any combination of competing lines to the South, coupled with operating economies to which it is not necessary to refer in detail, were factors of great importance that are now being neutralized by insatiable wage demands and soaring prices.

Other Investments and Resources

Thus far we have been dealing only with the creation, operation and financial progress of the Company's rail transportation system, comprising its railways in Canada and in the State of Maine, with such accessories as lake and river steamers, grain elevators, parlor and sleeping cars, etc.

In the annual reports of the Directors to the Shareholders giving the results of the Company's operations only the revenue from these sources is taken into account, and after proper deductions for operating expenses, annual interest charges and special appropriations, the balance is available for dividends. As already stated, it has been the practice for some years to distribute to the Ordinary Shareholders an annual dividend on a 7% basis, and to carry the remainder to surplus account for improvements to the property and for the general purposes of the Company.

But besides this revenue from its transportation system the Company receives a substantial annual return on investments of one character or another that have come into existence during the past thirty-five years. The Special Income from these investments, exclusive of receipts from land sales, is in excess of $10,000,000 per annum, out of which the Ordinary Shareholders have been receiving a further annual dividend of 3%.

In the early days of the Company it was the practice of railway corporations on this Continent and elsewhere to divest themselves of auxiliary enterprises not essentially connected with the operation of the railway, such as Express Companies, Telegraphs, Terminal Warehouses, etc., by disposing of them to corporations engaged in these several kinds of business activity, or to individuals. Too frequently, through one channel or another, those intimately associated with the railway companies' affairs succeeded in acquiring for themselves most valuable and productive properties, and little criticism would have been aroused if the Canadian Pacific had adopted the same policy. But this was not done. All of these revenue-producing attributes were reserved and developed for the advantage and benefit of the Shareholders, and the resulting profit to the Company's exchequer is very substantial indeed. Every terminal yard, station and property over the entire system belongs to the Company itself, and was acquired or created with money furnished by the Shareholders, the aggregate amount reaching very large figures.

Land Grants appertaining to lines purchased or leased in perpetuity, coal mines, metal mines, smelters and other assets that now play such an important part in the Annual Balance Sheet of the Company, might also have been coveted and acquired by what are commonly known as the "Insiders," had any such spirit inspired the Board of Directors from time to time, but not a penny was permitted to slip through such a channel. Indeed, it might be said that while the individual credit of Directors was on more than one occasion asked and freely granted at the initial stages of a transaction, no consideration was ever given excepting the refund of out-of-pocket expenses and bank interest; nor was anything more expected.

At times, and more particularly during the busy months of the Autumn, there was considerable difficulty about securing sufficient ocean space on steamers sailing from Canadian ports for the export traffic carried on the Company's lines, and to remedy this the Elder Dempster Atlantic Fleet, comprising fifteen steamships, was purchased in 1902.

At a later date the Canadian Shareholders of the Allan Line Steamship Company opened negotiations for the sale to the Canadian Pacific of all the share capital of the Allan Company. The transaction was carried out to the satisfaction of both parties, and for several years the business was conducted under the Allan name and through the Allan Agencies.

The earnings of these steamship lines were devoted in a large part to the payment of the floating debt that the Company had assumed at the time of the purchase, and the construction and acquisition of additional steamships.

The development of business on the Pacific Coast of Canada demanded a number and class of vessels (and a consequent investment of capital) quite beyond the reach of the Navigation Company that was performing this service in connection with the railway, and to meet this requirement the Canadian Pacific decided to acquire the steamers then performing the service, at a price acceptable to the owners. This having been done, the Company proceeded immediately to enlarge and improve the Fleet by purchase and construction from time to time of larger, faster and more modern ships for the encouragement and care of the business. The policy proved satisfactory and remunerative. This Ocean and Coastal Steamship property, secured by a comparatively small demand on capital account, has a market value in excess of $65,000,000 on the basis of present market prices.

It is not necessary to describe in detail the manner in which other properties and assets that came to the Company from one source or another, but mainly through acquired railways, were nursed and developed to a profit producing stage. It is sufficient to know that they belong to the Shareholders of the Canadian Pacific, and that the money necessary for their acquisition or development came from the surplus income of the Company and, therefore, of its Shareholders.

The Land Interests

The Company's Land Grant is a source of serious anxiety to financial doctrinaires who have only half studied the subject. They appear to have forgotten, or to have never known, that as late as 1888 when the railway had been in operation for some time, the Dominion Government consented, as a consideration for some concessions under the Charter, to guarantee the interest on $15,000,000 Land Grant Bonds, but would in no circumstances guarantee the payment of the principal, which would have given the security increased market value, although the Bonds had fifty years to run and only represented a value of about 75c. per acre. There is no doubt that at that time the Government could have recovered the whole Land Grant at the price per acre just mentioned.

For many years this Land Grant was a great drag on the Company. Interest had to be met on the Land Grant Bonds whose proceeds had been devoted to the purposes of the railway, and although considerable sums were spent on an immigration propaganda land sales were disappointing and unsatisfactory, and the prices yielded the Company only from $1.50 to $2.50 per acre after the selling expenses had been paid. It was not until 1898 that agricultural lands in Western Canada attracted buyers in any number, and even in that year, when 348,000 acres were sold, and in the three subsequent years the net return to the Company was only about $2.80 per acre. These prices were realized from sales of comparatively small parcels. The value placed on these lands in large areas by investors may be gathered from the fact that at the end of 1901 the shares of the Canada North West Land Company could have been bought in open market at a price equivalent to $1.45 per acre, for the 1,555,000 acres belonging to that Company at the time.

Shortly after the Canadian Pacific contract was made, the Federal Parliament commenced to vote grants of land in very large areas by way of subsidy for the construction of railway lines in Western Canada to many companies incorporated for the purpose. Most of these companies never materialized, but it was necessary to establish reserves from which their selections could be made, if by chance they came into being while the subsidy agreements were in force, and other companies (before the advent of the Canadian Northern) built some miles of railway, secured the land to which they were entitled, and then collapsed. All of this had an important bearing on the time required to select the lands earned by the construction of the Canadian Pacific, because of the difficulty about having reserves defined in districts where the character of the land would meet the requirements of the agreement; and to satisfy the last 3,000,000 acres of its Grant the Company consented to accept lands along the line West of Medicine Hat in what was then known as the "semi-arid" district, where there was little or no water, a very uncertain rainfall and other conditions that made the lands practically valueless. To recover this tract it was decided to adopt a plan of irrigation, and an expenditure of over $15,000,000 was made in the construction of the requisite works and ditches in the Eastern and Western Blocks, comprising about 2,240,000 acres. Of this area, that was not previously worth five cents an acre for practical purposes, the portions that can be served by the ditches command high prices, and a considerable percentage of the balance is improved in value by reason of the water supply, so we find that in 1904 the Company was willing to expend, and forthwith proceeded to expend, with a view to making useless lands productive and to encourage the settlement of territory adjacent to its railway, a sum of money in excess of the amount that it would have been willing to accept for the entire Land Grant sixteen years before.

Meanwhile the Company year by year made every effort and an expenditure approximating $17,000,000 in the encouragement of immigration, and to forward the sale and settlement of such lands as it had received. A most important factor in securing settlers who would purchase farms was the construction of thousands of miles of principal and branch lines not contemplated by the original Charter. Indeed, the Canadian Pacific as defined in that Charter, with its attendant Land Grant, would have been a sorry investment if left by itself.

To recapitulate, 14,000,000 acres of the original Canadian Pacific Land Grant have been sold to date, yielding in round figures $94,000,000, or an average of $6.72 per acre, but against this there were the expenditures during thirty years for immigration propagarda, agencies, commissions, and other expenses incident to sales, and the outlay for irrigation works, which made the net return to the Company less than $5.00 per acre. Naturally, the 4,300,000 acres that remain unsold will command much higher figures. In all this no account is taken of the vast sums spent by the Company in the construction of branch lines to open up the lands, nor of the tax on the

Company's resources during the period required to bring to a productive basis these branch lines, which at the outset earned neither interest nor, in most cases, operating expenses.

With the exception of the comparatively small advantage given to the Shareholders when, in 1914, they were offered the 6% Note Certificates secured by outstanding land contracts, all of the net money that came to the Company from the sale of these lands was devoted to the railway property, taking the place of that much capital and reducing the Company's annual interest charges proportionately.

The exemption from taxes of the Canadian Pacific Land Grant for a period of 20 years after their selection has been a source of considerable adverse comment, but the delay in selection was largely due to circumstances already explained, over which the Company had no control, and it is manifest that at the time the Grant was made, and for some years after, no one could have afforded to take the lands as a free gift if they were subject to taxation. When the lands were sold, however the purchaser became a tax payer, and the records show that the 14,000,000 acres thus far sold have brought to the Public Treasury in taxes an amount exceeding $20,000,000.

The Ten Per Cent. Clause

The Dominion Railway Act in force in 1880, when the contract was made for the construction of the Canadian Pacific Railway, authorized a return of Fifteen Per Cent. on the capital invested by any railway company in its enterprise before the tariffs for the carriage of passengers and freight could be scaled down by the Government authority named in the Statute, but in the contract with the Canadian Pacific Railway Company, confirmed by Act of Parliament, this limit was reduced to Ten Per Cent. per annum. This is what is known as the "Ten Per Cent. Clause" in the Company's Charter. Years ago this Clause became ineffective when the Company admitted that the net earnings had reached Ten Per Cent. on the capital invested, and its Tariffs came under the control and supervision of the Board of Railway Commissioners.

The suggestion made in some quarters that the spirit and intent of this Clause was to limit the Company's dividends to Ten Per Cent. is entirely out of harmony with the clear, unquestionable language of the instrument. The Clause had no more relation, direct or indirect, to the Canadian Pacific dividends than it had to the dividends of any other Railway Company, or of any commercial or industrial corporation. The Company has been and is absolutely untrammelled in the declaration of such annual dividends as the Directors may feel justified in declaring out of the revenue, and Seventeen Per Cent. instead of Ten Per Cent. per annum might properly have been distributed from the average earnings of the railway and the income from investments and extraneous assets during the past few years, had the Directors not been convinced that a prudent and conservative policy was in the best interest of the property.

The total capitalization of the Canadian Pacific Railway Company's transportation system, comprising 13,400 miles of railway in Canada operated directly by the Company, with the rolling stock equipment and steamboat craft on inland waters, its splendid terminal stations and facilities, and other accessories, is $623,000,000, but this amount is far below the actual cost of the property, which, excluding the cost estimated at $31,000,000 of the sections of railway constructed by Government and handed over to the Company, is carried in the books at $687,000,000, after having been reduced by $131,000,000 provided from surplus earnings, land sales and other sources, expended on the property and written off without being capitalized. So that, based upon cost, the transportation system represents an outlay of $818,000,000, or about $61,000 per mile, which is lower than the average cost per mile of the other principal Canadian railways, and about half the cost per mile of the railway system of the Grand Trunk in Canada, based upon its outstanding capital.

In addition to the mileage to which reference is made, the Company owns or controls 948 miles of railway lines in Nova Scotia, Quebec and British Columbia that are operated separately for economic or other reasons, but their affairs have no reference to the figures that have been quoted.

The great benefits resulting from the conservative financial policy pursued by the Canadian Pacific Directorate are strikingly illustrated by the fact that the net earnings per mile required to meet the annual interest charges on the Grand trunk, Canadian Northern, Grand Trunk Pacific and National Transcontinental railways, would suffice to cover the annual interest charges, dividend on the Preference Stock, and 7% dividend on the Common Stock of the Canadian Pacific.

Extraneous Investments

The extraneous investments and available resources belonging to the Shareholders of the Canadian Pacific are quite distinct from the transportation system and play no part in the transportation accounts. They are made up of the Ocean and Coastal Steamship Lines, investments authorized by Parliament in shares of Railway Companies outside of Canada, made, in most cases, many years ago when the shares that now command high prices had only a nominal market value, Government Securities and Loans, money set aside for investment, and other items, amounting in the aggregate to $137,000,000, and available resources in unsold lands, amounts payable on lands already sold, coal mining and other properties, having an estimated present and prospective value of $116,000,000, after providing for the retirement of the outstanding Note Certificates.

The total appraisement of these items, namely, $253,000,000, is substantially below the market value. Large as is the amount, it was not accumulated by speculation or risky exploitation. Apart from the temporary loans and money it represents the accumulated worth of properties and resources many of which had little or no value when they came into the possession of the Company, but were developed and safeguarded until they became profitable.

Doubtless such development in its conception and execution had its selfish side, but no one familiar with the details of Canada's progress in the last quarter of a century will deny that every work of development undertaken by the Company, quite aside from its railway enterprise and its vigorous immigration policy, has given to the Country a return infinitely greater than any received by the Company or its Shareholders.

Summary

Summarized it would appear:—

1. That the Canadian Pacific Railway, as originally designed, forms but a small part of the present great system with its comprehensive operating traffic and business organization, through which in normal times thousands of people are brought every year to and through Canada from all portions of the civilized world, thus helping to people the Country and to bring her vast resources under general notice.

2. That the cost of the transportation system as described in this Memorandum was $818,000,000 against which there is outstanding capital of all classes amounting to $623,000,000.

3. That every share of $100 Ordinary Stock in the hands of the public represents the payment into the Company's Treasury of $112 in cash, and $31 from surplus income, or a total of $143.

4. That it has been the Company's policy to avoid mortgage debt and mandatory interest charges with their attendant dangers.

5. That lands and resources capable of development, belonging to the original Company or that came into its possession through the acquisition of other railways, have been husbanded, developed and utilized so successfully and advantageously that, distinct from their railway transportation system, the Shareholders have extraneous assets valued on a moderate basis at $253,000,000.

6. That the highest dividend paid to Shareholders from transportation revenue, namely, 7% per annum, is only equivalent to 2¼% per annum on the cost of the railway system, and if the dividend of 3% from Special Income be added, making a total of 10% per annum, the distribution is less than 2½% on a conservative valuation of the Company's total assets.

7. That the average rates per passenger mile and per ton mile for the carriage of passengers and freight, respectively, received by the Canadian Pacific were lower than those received for the same services by any combination of railway lines in the United States constituting a through route between the Atlantic and the Pacific Ocean.

8. That the wages paid by the Canadian Pacific in every branch of its service are at lesser as high as, and the cost of its rails, fuel and general supplies is higher than United States railway companies are required to pay, and in all of these items the increase in both Canada and the United States has been abnormal since the outbreak of the War.

9. That the Company's successful effort to keep its capitalization substantially below the real value of its property and assets deserves the commendation of the Canadian people and should not, in any case, be made a pretext for penalizing the Company when rates for the carriage of traffic, or other matters relating to general railway policy, are before Parliament or Government for consideration and decision.

The Shareholders and Directors of the Company have always been impressed with the idea that the interests of the Company are intimately connected with those of the Dominion, and no effort or expense has been spared to help in promoting the development of the whole Country.

[Adv.]

Central News Photo Service

A Light Railway Carrying Strange Freight

Railway Officers

Executive, Financial, Legal and Accounting

J. M. Johnson, vice-president of the Missouri Pacific, with headquarters at Chicago, has been transferred to San Francisco, Cal., where he will have charge of the road's Pacific coast interests. Mr. Johnson's office in Chicago has been discontinued.

James C. Davis, whose appointment as general solicitor, in charge of the legal department of the Chicago & North Western, was announced in these columns on April 26, was born in Keokuk, Iowa, on September 2, 1857. He attended the public schools there and the Hellmuth Boys' College at London, Ont. His legal training was gained while employed in the law office of C. P. Lomax, Keokuk, Iowa. He was admitted to the bar in 1877 and practiced law at Keokuk between 1877 and 1903. During the period between 1881 and 1883 he was city solicitor of Keokuk. On January 3, 1903, he was appointed general attorney for the Chicago & North Western, for the state of Iowa, with headquarters at Des Moines, which position he held continuously for 16 years, until his appointment as mentioned above. As general solicitor he will have headquarters at Chicago.

John M. Rapelje, whose appointment as acting vice-president, in charge of operations for the Northern Pacific lines east of St. Paul, was announced in these columns on April 12, was born at Chippewa, Ont., on January 22, 1857. He began railway work in August, 1879, as a brakemen on the Grand Trunk, and then became a fireman on the Atchison, Topeka & Santa Fe. From May, 1882, to November, 1887, he was conductor on the Canadian Pacific, and from January of the following year to June, 1898, was conductor on the Yellowstone division of the Northern Pacific. He was then appointed trainmaster on the same division, and subsequently was again a conductor until June, 1902, when he was reappointed trainmaster on that division. From April, 1905, to July, 1908, he was superintendent of the same division at Glendive, Mont., and from the latter date to May, 1910, was superintendent of the Rocky Mountain division, at Missoula, Mont. He was then transferred to the Idaho division, at Spokane, Wash., where he remained until April, 1912, when he was appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont., with headquarters at Livingston, Mont. In May, 1914, he was promoted to assistant general manager at St. Paul, Minn., remaining in this position until October, 1914, when he was appointed general manager of the lines east of Paradise, Mont. He continued as general manager until his recent promotion to acting vice-president in charge of operation at St. Paul, Minn., as mentioned above.

J. M. Rapelje

Operating

S. W. Crabbe, has been appointed superintendent of the Schreiber division of the Canadian Pacific, with headquarters at Schreiber, Ont., vice **G. J. Fox,** transferred.

H. E. Whittenberger, general superintendent of the Ontario lines of the Grand Trunk, with office at Toronto, Ont., has been appointed general superintendent of the Western lines, with headquarters at Chicago; **C. G. Bowker,** general superintendent of the Eastern lines, with office at Montreal, Que., succeeds **Mr. Whittenberger,** and **W. R. Davidson,** general superintendent of the Western lines, with headquarters at Chicago, succeeds **Mr. Bowker.**

W. R. Hudson, formerly general superintendent of the Chesapeake & Ohio, has been appointed general superintendent of the Seaboard Air Line, with headquarters at Hamlet, N. C., succeeding **R. S. Marshall,** resigned.

J. L. McKee, superintendent of the Buffalo division of the Delaware, Lackawanna & Western, with office at Buffalo, N. Y., has been appointed assistant general superintendent of the Michigan Central, with headquarters at Detroit, Mich.

Claude R. Young has been appointed trainmaster of the Illinois Central, Cairo district, with headquarters at Fulton, Kentucky, succeeding **Herbert W. Williams,** transferred to the Fulton district, in place of **Edward Bodamer,** transferred, effective April 1.

A. E. Staub, superintendent of car service of the Delaware, Lackawanna & Western, with office at Scranton, Pa., has been appointed superintendent of the Buffalo division, with headquarters at Buffalo, N. Y., **F. J. Lawrence,** acting superintendent of the Scranton division, with office at Scranton, has been appointed superintendent of the same division, and **A. J. Miller,** traveling car agent, with office at Scranton, has been appointed superintendent of car service, succeeding Mr. Staub.

John Carter Stamm, whose appointment as superintendent of the Vicksburg, Shreveport & Pacific, with headquarters at Shreveport, La., has already been announced in these columns, was born in 1872, at Satartia, Miss., and was educated in the common schools. He began railway work in 1885, with the New Orleans & Northeastern division of the Queen & Crescent as a telegraph operator at the age of 13, and his entire railway service has been with the same system. He served later consecutively as train despatcher, chief train despatcher and trainmaster until his recent appointment as superintendent as above noted.

A. J. Sullivan, assistant superintendent of the St. Louis-San Francisco at Sapulpa, Okla., has been appointed inspector of passenger train service with office at Springfield, Mo.; **W. H. Malone,** superintendent of locomotive performance, has been appointed inspector of freight train service, with office at Springfield; **L. N. Bassett,** superintendent of terminals at Springfield, has been appointed superintendent at Sapulpa, Okla., in place of **A. W. MacElveny,** resigned; **F. G. Faulkner,** assistant superintendent at Birmingham, Ala., has been appointed superintendent of terminals at Springfield, Mo., in place of Mr. Bassett; **B. F. McDonough** and **C. S. Hall** have been appointed transportation inspectors, with headquarters at Springfield, Mo.

W. S. Cooper, general superintendent of the Southern district of the Chicago, Milwaukee & St. Paul, has been appointed assistant to the vice-president, with office in Chicago. **W. M. Weidenhamer,** inspector of transportation at Chicago, has been promoted to general superintendent of the Southern district, succeeding Mr. Cooper, with headquarters at Chicago. **N. P. Thurber,** superintendent of the Southern Minnesota division with headquarters at LaCrosse, Wis., has been transferred to the Kansas City division with headquarters at Ottumwa, Iowa, succeeding **J. M. Oxley,** assigned to other duties. **M. J. Larson** has been appointed superintendent of the Southern Minnesota division, succeeding Mr. Thurber. All these changes were effective May 1.

Edward Flynn, whose appointment as general superintendent of the Chicago, Burlington & Quincy, with headquarters at Lincoln, Neb., was announced in these columns on April 5, was born at Bement, Ill., on May 19, 1873. He began railway work in April, 1900, as a trackman with the Chicago & Eastern Illinois. For the next few years he was employed consecutively in the track department of the Wabash, as a brakeman with the Southern Pacific, the Wabash, and the Burlington, and as a conductor on the last-named line. On November 15, 1906, he was promoted to trainmaster of the Burlington, with headquarters at Omaha, Neb. Two years later Mr. Flynn was promoted to assistant superintendent

at Lincoln, Neb., and on April 15, 1909, he became superintendent, with office at Omaha. On May 20, 1911, he was transferred to McCook, Neb., two years later to La Crosse, Wis., and on June 1, 1917, to Chicago. He remained at Chicago as superintendent, which position he held until his recent promotion to general superintendent of the Nebraska district, as mentioned above.

Traffic

C. T. Slauson, foreign freight agent of the Missouri Pacific at Chicago, has been transferred to St. Louis with the title of manager of foreign freight traffic.

John Bickel, commercial agent of the Duluth, South Shore & Atlantic at Chicago, has been transferred to the general superintendent's office at Marquette, Mich.

George T. Stocks, commercial agent of the Central of Georgia, with office at Rome, Ga., has been assigned to other service; **F. D. Robinson,** commercial agent at Oklahoma City, Okla., has been assigned to service on the line and the agencies at both places have been closed.

R. B. Robertson, assistant general freight agent of the Chicago, Indianapolis & Louisville has been placed in charge of the Chicago district office of inland traffic service of the U. S. War Department, effective May 1. Matters heretofore handled by Mr. Robertson will be taken care of by **A. C. Tumy,** general freight agent.

John A. Jackson, assistant general freight and passenger agent of the Gulf, Mobile & Northern, with office at Mobile, Ala., has been appointed general freight and passenger agent, with office at Mobile, vice **W. L. O'Dwyer** resigned to accept service elsewhere, and the position of assistant general freight and passenger agent has been abolished.

N. B. Wright, assistant freight traffic manager of the Central of Georgia, with office at Savannah, Ga., has been detached from the service of the company to serve as a member of the Freight Traffic Committee for the Southern regional territory; **J. G. Carlisle,** general freight agent, with office at Savannah, has been appointed assistant freight traffic manager and will exercise the authority heretofore delegated to Mr. Wright; **F. L. Corwin,** Florida freight agent at Jacksonville, Florida, has been assigned to service on the line; **J. R. Randolph,** commercial agent at Jacksonville, has taken a position in the office of the regional director, and the Florida freight agency at Jacksonville has been closed; **H. E. Shepard,** commercial agent at Tampa, Florida, and **S. L. Peeples,** commercial agent at Memphis, Tenn., have been assigned to service on the line, and the agencies at both places have been closed.

Engineering and Rolling Stock

D. Hubbard has been appointed division engineer of the Newark division of the Baltimore & Ohio, with headquarters at Newark, Ohio, succeeding **C. R. Diermar,** who has been transferred.

D. Rounseville, engineer maintenance of way of the Chicago & North Western, at Chicago, has been appointed assistant to the chief engineer, and the office of engineer maintenance has been discontinued.

W. H. Penfield, assistant to the vice-president of the Chicago, Milwaukee & St. Paul at Chicago, has been appointed engineer of track maintenance with the same headquarters, effective May 1.

F. W. Fritchey, of the Division of Locomotive Inspection, Interstate Commerce Commission, District 15, has been appointed superintendent of shops of the Wheeling & Lake Erie, with headquarters at Brewster, Ohio.

W. Wright, division master mechanic of the Canadian Pacific, with office at Toronto, Ont., has been transferred as division master mechanic to Brownville Junction, Me., replacing **C. Powers,** who has been made division master mechanic at Toronto.

Railway Officers in Government Service

J. M. Guild, safety agent, of the Union Pacific, on May 1, left the service to report to the School of Military Aeronautics, Berkeley, California, for training as an aviator.

Eugene McAuliffe, president of the Union Colliery Company and formerly general coal agent of the Frisco Lines has been appointed manager of the Fuel Conservation Section, Division of Transportation of the United States Railroad Administration, and will give attention to the conservation of fuel on all roads, with special reference to its preparation and proper use. He will also investigate and make recommendations in connection with its transportation to and handling at fuel stations; **Major Edward C. Schmidt** now with the Fuel Administration has been appointed an assistant to Mr. McAuliffe, who will have headquarters both at Washington and at St. Louis.

Obituary

Balie P. Waggener, general solicitor of the Missouri Pacific for Kansas, Nebraska and Colorado, with office at Atchison, Kan., died at his home in that city on April 28. Mr. Waggener was born in Platte county, Neb., on July 18, 1847. He was admitted to the bar in June, 1867, following which he began the practice of law at Atchison. From 1876 to 1910, he was general attorney of the Missouri Pacific for Kansas and Nebraska, and from 1910 to the date of his death he was general solicitor of the same road for Kansas, Nebraska and Colorado.

Joseph W. Taylor, for 19 years secretary of the American Railway Master Mechanics' Association, the Master Car Builders' Association and the Western Railway Club died suddenly at his home, 4102 Calumet avenue, Chicago, on the morning of April 24, from organic heart disease. Mr. Taylor was one of the most widely known and best liked men in railway mechanical circles. He died in the harness, so to speak, having been at his desk the day before he died and in apparently good health. Mr. Taylor was born in Saltsburg, Pa., on March 9, 1862. He started railroad work on the Pennsylvania in his native town and later went with the Erie Railroad, rising to the position of chief clerk to the general manager and secretary to the vice-president. On leaving the Erie, he became secretary to John W. Cloud, who was formerly secretary of the mechanical associations. In 1899 Mr. Cloud went to London to take charge of the British office of the Westinghouse Air Brake Company and in June of that year Mr. Taylor was appointed secretary of the associations. Throughout his long tenure of these offices Mr. Taylor discharged his duties in a thorough, efficient and most trustworthy manner. He is said to have never betrayed the confidence of his position. The reports and proceedings which he edited were always models of correctness. Mr. Taylor's personal characteristics endeared him to a large circle of acquaintances. Straightforward and open in his manner, sympathetic and always ready to lend assistance, he went about it in a quiet way, aiding many without the knowledge even of his intimate friends. Mr. Taylor was a 32nd degree Mason and his funeral was held in Chicago, Saturday, April 27 under the auspices of the Knights Templar. Mr. Taylor is survived by a brother; a son, Joseph W. Taylor, Jr., and his widow, who is in very delicate health and has on that account resided in El Paso, Texas, with her son for a few years past.

J. W. Taylor

In Military Service

Patrick Ryan, locomotive engineman of the Illinois Central, a member of the American Railway Engineers' Regiment in France, was killed in action on April 18.